



SEQUENCE LISTING

<110> Osteryoung, Katherine W.
Vitha, Stanislav
Koksharova, Olga A.
Gao, Hongo

<120> Plastid Division and Related Genes and Proteins, and Methods of Use

<130> MSU-08153

<140> 10/600,070

<141> 2003-06-20

<160> 208

<170> PatentIn version 3.3

<210> 1

<211> 2406

<212> DNA

<213> Arabidopsis thaliana

<400> 1

atggaagctc tgagtcacgt cggcattggt ctctcccat tccaattatg ccgattacca 60

ccggcgacga caaagctccg acgtagccac aacacctcta caactatctg ctccgccagc 120

aaatgggccc accgtcttct ctccgacttc aatttcacct ccgattcctc ctctcctcc 180

ttcgccaccg ccaccaccac cgccactctc gtctctctgc caccatctat tgatcgtccc 240

gaacgccacg tccccatccc cattgatttc taccaggtat taggagctca aacacatttc 300

ttaaccgatg gaatcagaag agcattcgaa gctaggggtt cgaaaccgcc gcaattcggg 360

ttcagcgacg acgctttaat cagccggaga cagattcttc aagctgcttg cgaaactctg 420

tctaactctc ggtctagaag agagtacaat gaagggtctt ttgatgatga agaagctaca 480

gtcatcactg atgttccttg ggataagggt cctggggctc tctgtgtatt gcaagaagg 540

ggtgagactg agatagttct tcgggttggt gaggtctctg ttaaggagag gttgcctaag 600

tcgtttaagc aagatgtggt tttagttatg gcgcttgctt ttctcgatgt ctcgagggat 660

gctatggcat tggatccacc tgattttatt actgggtatg agtttggtga ggaagctttg 720

aagcttttac aggaggaagg agcaagtagc cttgcaccgg atttacgtgc acaaattgat 780

gagactttgg aagagatcac tccgcgttat gtcttgagc tacttggtt accgcttggt 840

gatgattacg ctgcgaaaag actaaatggt ttaagcgggt tgcggaatat tttgtggtct 900

gttgaggag gtggagcatc agctcttggt ggggggttga cccgtgagaa gtttatgaat 960

gaggcgtttt tacgaatgac agctgctgag caggttgatc tttttgtagc taccceaagc 1020

āataāttccag cagagtcatt tgaagtttac gaagttgcac ttgctcttgt ggctcaagct	1080
tttattggta agaagccaca ccttttacag gatgctgata agcaattcca gcaacttcag	1140
caggctaagg taatggctat ggagattcct gcgatgttgt atgatacacg gaataattgg	1200
gagatagact tcggtctaga aaggggactc tgtgcactgc ttataggcaa agttgatgaa	1260
tgccgtatgt ggttgggctt agacagtgcg gattcacaaat ataggaatcc agctattgtg	1320
gagtttgttt tggagaattc aaatcgtgat gacaatgatg atctccctgg actatgcaaa	1380
ttgttggaat cctgggtggc aggggttgtc tttcctaggt tcagagacac caaagataaa	1440
aaattttaa ctcggggacta ctatgatgat cctatggttt tgagttactt ggaaagagtg	1500
gaggtagttc aggggttctcc tttagctgct gctgcaacta tggcaaggat tggagccgag	1560
catgtgaaag ctagtgcctat gcaggcactg cagaaagttt ttccttcccg ctatacagat	1620
agaaactcgg ctgaacccaa ggatgtgcaa gagacagtgt ttagtgtaga tcctgttggt	1680
aacaatgtag gccgtgatgg tgagcctggg gtctttattg cagaagctgt aagaccctct	1740
gaaaactttg aaactaatga ttatgcaatt cgagctgggg tctcagagag tagcgttgat	1800
gaaactactg ttgaaatgtc cgttgctgat atgttaaagg aggcaagtgt gaagatccta	1860
gctgctgggtg tggcaattgg actgatttca ctgttcagcc agaagtattt tcttaaaagc	1920
agctcatctt ttcaacgcaa ggatatgggt tcttctatgg aatctgatgt cgctaccata	1980
gggtcagtca gagctgacga ttcagaagca cttcccagaa tggatgctag gactgcagag	2040
aatatagtat ccaagtggca gaagattaag tctctggctt ttgggcctga tcaccgcata	2100
gaaatgttac cagaggtttt ggatgggcga atgctgaaga tttggactga cagagcagct	2160
gaaactgcgc agcttgggtt ggtttatgat tatacactgt tgaaactatc tgttgacagt	2220
gtgacagtct cagcagatgg aaccctgct ctggtggaag caactctgga ggagtctgct	2280
tgtctatctg atttgggttca tccagaaaac aatgctactg atgtcagaac ctacacaaca	2340
agatacgaag ttttctggtc caagtcaggg tggaaaatca ctgaaggctc tgttcttgca	2400
tcataa	2406

<210> 2
 <211> 801
 <212> PRT
 <213> Arabidopsis thaliana

<400> 2

Met Glu Ala Leu Ser His Val Gly Ile Gly Leu Ser Pro Phe Gln Leu
1 5 10 15

Cys Arg Leu Pro Pro Ala Thr Thr Lys Leu Arg Arg Ser His Asn Thr
20 25 30

Ser Thr Thr Ile Cys Ser Ala Ser Lys Trp Ala Asp Arg Leu Leu Ser
35 40 45

Asp Phe Asn Phe Thr Ser Asp Ser Ser Ser Ser Ser Phe Ala Thr Ala
50 55 60

Thr Thr Thr Ala Thr Leu Val Ser Leu Pro Pro Ser Ile Asp Arg Pro
65 70 75 80

Glu Arg His Val Pro Ile Pro Ile Asp Phe Tyr Gln Val Leu Gly Ala
85 90 95

Gln Thr His Phe Leu Thr Asp Gly Ile Arg Arg Ala Phe Glu Ala Arg
100 105 110

Val Ser Lys Pro Pro Gln Phe Gly Phe Ser Asp Asp Ala Leu Ile Ser
115 120 125

Arg Arg Gln Ile Leu Gln Ala Ala Cys Glu Thr Leu Ser Asn Pro Arg
130 135 140

Ser Arg Arg Glu Tyr Asn Glu Gly Leu Leu Asp Asp Glu Glu Ala Thr
145 150 155 160

Val Ile Thr Asp Val Pro Trp Asp Lys Val Pro Gly Ala Leu Cys Val
165 170 175

Leu Gln Glu Gly Gly Glu Thr Glu Ile Val Leu Arg Val Gly Glu Ala
180 185 190

Leu Leu Lys Glu Arg Leu Pro Lys Ser Phe Lys Gln Asp Val Val Leu
195 200 205

Val Met Ala Leu Ala Phe Leu Asp Val Ser Arg Asp Ala Met Ala Leu
210 215 220

Asp	Pro	Pro	Asp	Phe	Ile	Thr	Gly	Tyr	Glu	Phe	Val	Glu	Glu	Ala	Leu	225	230	235	240
Lys	Leu	Leu	Gln	Glu	Glu	Gly	Ala	Ser	Ser	Leu	Ala	Pro	Asp	Leu	Arg	245	250	255	
Ala	Gln	Ile	Asp	Glu	Thr	Leu	Glu	Glu	Ile	Thr	Pro	Arg	Tyr	Val	Leu	260	265	270	
Glu	Leu	Leu	Gly	Leu	Pro	Leu	Gly	Asp	Asp	Tyr	Ala	Ala	Lys	Arg	Leu	275	280	285	
Asn	Gly	Leu	Ser	Gly	Val	Arg	Asn	Ile	Leu	Trp	Ser	Val	Gly	Gly	Gly	290	295	300	
Gly	Ala	Ser	Ala	Leu	Val	Gly	Gly	Leu	Thr	Arg	Glu	Lys	Phe	Met	Asn	305	310	315	320
Glu	Ala	Phe	Leu	Arg	Met	Thr	Ala	Ala	Glu	Gln	Val	Asp	Leu	Phe	Val	325	330	335	
Ala	Thr	Pro	Ser	Asn	Ile	Pro	Ala	Glu	Ser	Phe	Glu	Val	Tyr	Glu	Val	340	345	350	
Ala	Leu	Ala	Leu	Val	Ala	Gln	Ala	Phe	Ile	Gly	Lys	Lys	Pro	His	Leu	355	360	365	
Leu	Gln	Asp	Ala	Asp	Lys	Gln	Phe	Gln	Gln	Leu	Gln	Gln	Ala	Lys	Val	370	375	380	
Met	Ala	Met	Glu	Ile	Pro	Ala	Met	Leu	Tyr	Asp	Thr	Arg	Asn	Asn	Trp	385	390	395	400
Glu	Ile	Asp	Phe	Gly	Leu	Glu	Arg	Gly	Leu	Cys	Ala	Leu	Leu	Ile	Gly	405	410	415	
Lys	Val	Asp	Glu	Cys	Arg	Met	Trp	Leu	Gly	Leu	Asp	Ser	Glu	Asp	Ser	420	425	430	
Gln	Tyr	Arg	Asn	Pro	Ala	Ile	Val	Glu	Phe	Val	Leu	Glu	Asn	Ser	Asn	435	440	445	
Arg	Asp	Asp	Asn	Asp	Asp	Leu	Pro	Gly	Leu	Cys	Lys	Leu	Leu	Glu	Thr	450	455	460	

Trp Leu Ala Gly Val Val Phe Pro Arg Phe Arg Asp Thr Lys Asp Lys
 465 470 475 480

Lys Phe Lys Leu Gly Asp Tyr Tyr Asp Asp Pro Met Val Leu Ser Tyr
 485 490 495

Leu Glu Arg Val Glu Val Val Gln Gly Ser Pro Leu Ala Ala Ala Ala
 500 505 510

Thr Met Ala Arg Ile Gly Ala Glu His Val Lys Ala Ser Ala Met Gln
 515 520 525

Ala Leu Gln Lys Val Phe Pro Ser Arg Tyr Thr Asp Arg Asn Ser Ala
 530 535 540

Glu Pro Lys Asp Val Gln Glu Thr Val Phe Ser Val Asp Pro Val Gly
 545 550 555 560

Asn Asn Val Gly Arg Asp Gly Glu Pro Gly Val Phe Ile Ala Glu Ala
 565 570 575

Val Arg Pro Ser Glu Asn Phe Glu Thr Asn Asp Tyr Ala Ile Arg Ala
 580 585 590

Gly Val Ser Glu Ser Ser Val Asp Glu Thr Thr Val Glu Met Ser Val
 595 600 605

Ala Asp Met Leu Lys Glu Ala Ser Val Lys Ile Leu Ala Ala Gly Val
 610 615 620

Ala Ile Gly Leu Ile Ser Leu Phe Ser Gln Lys Tyr Phe Leu Lys Ser
 625 630 635 640

Ser Ser Ser Phe Gln Arg Lys Asp Met Val Ser Ser Met Glu Ser Asp
 645 650 655

Val Ala Thr Ile Gly Ser Val Arg Ala Asp Asp Ser Glu Ala Leu Pro
 660 665 670

Arg Met Asp Ala Arg Thr Ala Glu Asn Ile Val Ser Lys Trp Gln Lys
 675 680 685

Ile Lys Ser Leu Ala Phe Gly Pro Asp His Arg Ile Glu Met Leu Pro
 690 695 700
 Glu Val Leu Asp Gly Arg Met Leu Lys Ile Trp Thr Asp Arg Ala Ala
 705 710 715 720
 Glu Thr Ala Gln Leu Gly Leu Val Tyr Asp Tyr Thr Leu Leu Lys Leu
 725 730 735
 Ser Val Asp Ser Val Thr Val Ser Ala Asp Gly Thr Arg Ala Leu Val
 740 745 750
 Glu Ala Thr Leu Glu Glu Ser Ala Cys Leu Ser Asp Leu Val His Pro
 755 760 765
 Glu Asn Asn Ala Thr Asp Val Arg Thr Tyr Thr Thr Arg Tyr Glu Val
 770 775 780
 Phe Trp Ser Lys Ser Gly Trp Lys Ile Thr Glu Gly Ser Val Leu Ala
 785 790 795 800

Ser

<210> 3
 <211> 3667
 <212> DNA
 <213> Arabidopsis thaliana

<400> 3
 tggtctgcat taaggagaat acaattataa gcaatttgtc ttgatttcaa caagattttg 60
 cttggctata ggattcattg gctctgtttg cttttacatt tacatgtcat aatagtttcg 120
 aattttacac atttcagttg gatgttaaga aaagagaggg aattgatggg gttttgtggg 180
 tttaaacttt aaagtagtca agaattaagt cattggttta ctggtgctct atatgtgtaa 240
 aatgaaggca actccaacgg ttcttaggtg gaatagatta tttagacgat ttaacatcat 300
 aaagtccgtg gcgactgtaa catcatagat tgttttttat ttttttcagt agctggtgat 360
 gttttttgat ttaacttata ctactcaaaa tcaaaattcc ataaacccta gacgacccaa 420
 cagtctcttc aatatgtaaa acagaacaaa gtttttgtag tagcctaaaa agacactccc 480
 atggaagctc tgagtcacgt cggcattggt ctctcccat tccaattatg ccgattacca 540
 ccggcgacga caaagctccg acgtagccac aacacctcta caactatctg ctccgccagc 600

aaatggggccg accgtcttct ctccgacttc aatttcacct ccgattcctc ctccctcctcc	660
ttcgccaccg ccaccaccac cgccactctc gtctctctgc caccatctat tgatcgteccc	720
gaacgccacg tccccatccc cattgatttc taccagggtat taggagctca aacacatttc	780
ttaaccgatg gaatcagaag agcattcgaa gctaggggtt cgaaaccgcc gcaattcggt	840
ttcagcgacg acgctttaat cagccggaga cagattcttc aagctgcttg cgaaactctg	900
tctaactctc ggtctagaag agagtacaat gaaggctctc ttgatgatga agaagctaca	960
gtcatcactg atgttccttg ggataaggta atttcgattt cggaataata aagtttcttc	1020
gttttaattt catgaattgg ataaaggaag gaacttttat ctagtgaagg ttcctggggc	1080
tctctgtgta ttgcaagaag gtggtgagac tgagatagtt cttcgggttg gtgaggctct	1140
gcttaaggag aggttgcccta agtcgtttaa gcaagatgtg gttttagtta tggcgcttg	1200
gtttctcgat gtctcgaggg atgctatggc attggatcca cctgatttta ttactgggta	1260
tgagtttggt gaggaagctt tgaagctttt acaggtagtt tgacttgctt tggtaatttg	1320
acgagcggtg gctttataag aactttcttg atttgatact ttgttattga gtcttggtga	1380
ggaggaagga gcaagtagcc ttgcaccgga ttacgtgca caaattgatg agactttgga	1440
agagatcact ccgcgttatg tcttgagct acttggtta ccgcttggtg atgattacgc	1500
tgcgaaaaga ctaaattggt taagcgggtg gcggaatatt ttgtggtctg ttggaggagg	1560
tggagcatca gctcttggtg ggggttgac ccgtgagaag tttatgaatg aggcgttttt	1620
acgaatgaca gctgctgagc aggtatacag tttagatacc ttttttaaat ttcttttagca	1680
tgatataact ttaggtttct cattttaatg tatgttggtg ggtaggtga tctttttgta	1740
gctaccccaa gcaatattcc agcagagtca tttgaagttt acgaagttgc acttgctctt	1800
gtggctcaag cttttattgg taagaagcca caccttttac aggatgctga taagcaattc	1860
cagcaacttc agcaggctaa ggtaatggct atggagattc ctgcatggt gtatgataca	1920
cggaataatt gggagataga cttcggtcta gaaaggggac tctgtgcaact gcttataggc	1980
aaagttgatg aatgccgtat gtggttgggc ttagacagtg aggattcaca atataggaat	2040
ccagctattg tggagtttgt tttggagaat tcaaactgtg atgacaatga tgatctccct	2100
ggactatgca aattgttgga aacctggttg gcaggggttg tctttcctag gttcagagac	2160
accaaagata aaaaatttaa actcggggac tactatgatg atcctatggg tttgagttac	2220
ttggaaagag tggaggtagt tcagggttct cctttagctg ctgctgcaac tatggcaagg	2280
attggagccg agcatgtgaa agctagtgt atgcaggcac tgcagaaagt ttttccttcc	2340

cgctatacag atagaaaactc ggctgaacccc aaggatgtgc aagagacagt gtttagtgta	2400
gatcctgttg gtaacaatgt aggccgtgat ggtgagcctg gtgtctttat tgcagaagct	2460
gtaagaccct ctgaaaactt tgaaactaat gattatgcaa ttcgagctgg ggtctcagag	2520
agtiagcgttg atgaaactac tgttgaaatg tccgttgctg atatgttaaa ggaggcaagt	2580
gtgaagatcc tagctgctgg tgtggcaatt ggactgattt cactgttcag ccagaagtat	2640
tttcttaaaa gcagctcatc ttttcaacgc aaggatatgg tttcttctat ggaatctgat	2700
gtcgctacca taggtatgat taaatgatgc aattttcata tatctgcatt gctcaaaata	2760
tgttgtttt gtgagctaag aacatagttc ccacttaata catgtcccaa aagttgtacc	2820
aagattaaca agttgctgag taaatttcac taattatgct gcttgaattt tttgatcaaa	2880
ctgtagacag aaatgtaa at ttcactctca acatttctgt ttagaataac gtaggattag	2940
agattgcctt agtgtggctt tgtccaactt ttctttcctt gatttttttc ttttcgattt	3000
agggtcagtc agagctgacg attcagaagc acttcccaga atggatgcta ggactgcaga	3060
gaatatagta tccaagtggc agaagattaa gtctctggct tttgggcctg atcaccgcat	3120
agaaatgtta ccagaggtga ggggaataaat ctacaattca atcaattgtg tgaaaactgt	3180
tggacatgat tatagtctgg tgccttgttt gattctgtta tttatagggt ttggatgggc	3240
gaatgctgaa gatttggact gacagagcag ctgaaactgc gcagcttggg ttggtttatg	3300
attatacact gttgaaacta tctgttgaca gtgtgacagt ctcagcagat ggaaccctg	3360
ctctgggtga agcaactctg gaggagtctg cttgtctatc tgatttgggt catccagaaa	3420
acaatgctac tgatgtcaga acctacacaa caagatacga agttttctgg tccaagtcag	3480
gggtggaaaat cactgaaggc tctgttcttg catcataata tactcatatg tagcatgtct	3540
gagcttgoga gattctcttt gttctgtaaa ttctctctct aagttagtgt ttataaatga	3600
acacaaaaaa attaacgttc ttggcacacc cttttccttg atctaaacta taacataagg	3660
gctacaa	3667

<210> 4
 <211> 2469
 <212> DNA
 <213> Synechococcus PCC7942

<400> 4	
cttgccgact aaaggctaag catcgccatt ccttagatta aagcagtctg tcggcggcgc	60
tgtgccggtt aacaccagtc tgctgctgac agcgggtgcct ttctggggct tgccgtgtgg	120
gcgagtaacc gatcgctggg ataagagttg gtgcttctgg ctctcaagaa tagggttttc	180

cgtcgcgtat	tcccgatcac	atccccctgt	gtctgctacg	gagataacgc	cgatcactca	240
acagaattgg	taagttgacg	gtcaagttgg	gatgatgaag	tgggtcaag	ctggcgatcc	300
ggatctggtg	ggtgttctgt	gcgtattcct	ctcgattact	accgaattct	ctgtgttggc	360
gtgcaagcct	cggcagacaa	acttgccgaa	agctaccgcg	atcgccctcaa	ccaatcgccc	420
tcccatgagt	tttcagagct	ggcattgcag	gcgcggcggc	aactcctcga	agcagcgatt	480
gctgagctga	gtgatcccga	acagcgcgat	cgctacgata	gccgcttttt	tcagggcggt	540
ctggaagcga	ttgaaccaag	cctagaactc	gaagactggc	agcgaattgg	agccctgctg	600
atcctgctgg	aattggggga	atacgatcgc	gtttcgcaac	tggctgagga	actcctgcc	660
gactacgacg	cgagcgcaga	agtacgcgat	cagttcgcgc	ggggtgat	at	720
atcgcactat	cccagcaatc	cctcggtcga	gaatgccgtc	agcaggggtct	gtacgaacag	780
gccgcccagc	actttggccg	cagccagtct	gccctagccg	atcatcagcg	ctttcctgaa	840
ctgagtcgaa	ccctgcacca	agaacaagga	cagctacggc	cctatcgcat	tttggaagcg	900
ttggcccagc	ccttgactgc	cgatagcgat	cgccagcagg	gtttgctggt	gttgcaggcg	960
atgttggaag	accggcaggg	cattgaaggc	cctgggggat	atggctcggg	gctgaccctt	1020
gataactttt	tgatgtttct	ccagcaaatt	cgcggtatc	tgaccctggc	tgaacagcag	1080
ttgctgtttg	aatcggaagc	gcgtcggccc	tgcgcggctg	cgagcttttt	tgccctgtac	1140
accctgattg	cgcggggctt	ttgcgatcac	caaccctcgt	tgatccatcg	cgccagcttg	1200
ctcttgcatg	aactcaagag	ccgcatggat	gtgcacatcg	aacaggcgat	cgccagccta	1260
ttgctcggac	agcccgaaga	agctgaggcg	ctactcgtcc	agagccaaga	tgaggaaacc	1320
ctcagccaaa	tccgtgccct	agcccaaggg	gaagccctga	tcgtcggttt	gtgccgatcc	1380
acggaaacct	ggctagcgac	caaggatatt	ccggatttcc	gcgacctcaa	ggaaaggact	1440
gcgcgcgtgc	agccctactt	tgacgacccc	gatgtccaga	cctatctgga	tgcgatcgtg	1500
gagttgccgt	ccgatttgat	gccaacgccg	ctaccggttg	agccgcttga	ggtgcgatcg	1560
tcgttgctgg	ccaaggaact	gccgacccca	gcaacgcctg	gtgtagctcc	acccctcgc	1620
cgcgctgcc	gcgatcgctc	cgaacgtcct	gctcgcacgg	ccaaacgctt	gcccttgccc	1680
tggattgggt	tgggggttgt	ggtggttctc	ggcgggtgaa	caggggtttg	ggcttggcga	1740
tgcggttcca	attccacccc	gccgaccccg	cccccggtg	ttcaaacgct	gcctgaggcg	1800
gtacctgccc	cttcgcccgc	gccagttacc	gttgccctcg	atcgggctca	ggctgaaact	1860
gtgttgcaaa	actgggttgg	cgctaaagct	gcagccttgg	ggcctcaata	cgatcgcgat	1920

cgcttagcga cggtgctgac cggtgaggtt ctgcagactt ggcaggggtt ttctagccag 1980
 caggccaaca cccagctcac atcacagttc gatcacaagt taaccgtcga ctcagttcag 2040
 ctcagtgcgc gtgatcaacg agcagtagtc caagccaagg tcgatgaagt tgagcaggtc 2100
 tatcgaggcg accagctgct cgaaacgcgc cgagatttgg gcttggtgat ccgctaccag 2160
 ctcgtgcgcg agaacaacat ctggaaaatt gcttcgatta gtttggtgcg ctaggaattc 2220
 gcaaggggtg aacccctgc ggtcttttct gtagatcccc tagagcgatc gcagaatgtt 2280
 cagcgattcc tggatgtgcg cttgggcatt caagagtga tcaaaaatgt ggcgcacctt 2340
 gccctctttg tcgatcacat aagtgcgcg acccggaatc acaaacaggg ttttgggcac 2400
 gccataggtt tgacggaggc gatcgctgc atcgctcagc agttggaagg gcaagttgta 2460
 tttctgggc 2469

<210> 5
 <211> 631
 <212> PRT
 <213> Synechococcus PCC7942

<400> 5

Met Arg Ile Pro Leu Asp Tyr Tyr Arg Ile Leu Cys Val Gly Val Gln
 1 5 10 15

Ala Ser Ala Asp Lys Leu Ala Glu Ser Tyr Arg Asp Arg Leu Asn Gln
 20 25 30

Ser Pro Ser His Glu Phe Ser Glu Leu Ala Leu Gln Ala Arg Arg Gln
 35 40 45

Leu Leu Glu Ala Ala Ile Ala Glu Leu Ser Asp Pro Glu Gln Arg Asp
 50 55 60

Arg Tyr Asp Arg Arg Phe Phe Gln Gly Gly Leu Glu Ala Ile Glu Pro
 65 70 75 80

Ser Leu Glu Leu Glu Asp Trp Gln Arg Ile Gly Ala Leu Leu Ile Leu
 85 90 95

Leu Glu Leu Gly Glu Tyr Asp Arg Val Ser Gln Leu Ala Glu Glu Leu
 100 105 110

Leu Pro Asp Tyr Asp Ala Ser Ala Glu Val Arg Asp Gln Phe Ala Arg
 115 120 125

Gly Asp Ile Ala Leu Ala Ile Ala Leu Ser Gln Gln Ser Leu Gly Arg
 130 135 140

Glu Cys Arg Gln Gln Gly Leu Tyr Glu Gln Ala Ala Gln His Phe Gly
 145 150 155 160

Arg Ser Gln Ser Ala Leu Ala Asp His Gln Arg Phe Pro Glu Leu Ser
 165 170 175

Arg Thr Leu His Gln Glu Gln Gly Gln Leu Arg Pro Tyr Arg Ile Leu
 180 185 190

Glu Arg Leu Ala Gln Pro Leu Thr Ala Asp Ser Asp Arg Gln Gln Gly
 195 200 205

Leu Leu Leu Leu Gln Ala Met Leu Asp Asp Arg Gln Gly Ile Glu Gly
 210 215 220

Pro Gly Asp Asp Gly Ser Gly Leu Thr Leu Asp Asn Phe Leu Met Phe
 225 230 235 240

Leu Gln Gln Ile Arg Gly Tyr Leu Thr Leu Ala Glu Gln Gln Leu Leu
 245 250 255

Phe Glu Ser Glu Ala Arg Arg Pro Ser Pro Ala Ala Ser Phe Phe Ala
 260 265 270

Cys Tyr Thr Leu Ile Ala Arg Gly Phe Cys Asp His Gln Pro Ser Leu
 275 280 285

Ile His Arg Ala Ser Leu Leu Leu His Glu Leu Lys Ser Arg Met Asp
 290 295 300

Val His Ile Glu Gln Ala Ile Ala Ser Leu Leu Leu Gly Gln Pro Glu
 305 310 315 320

Glu Ala Glu Ala Leu Leu Val Gln Ser Gln Asp Glu Glu Thr Leu Ser
 325 330 335

Gln Ile Arg Ala Leu Ala Gln Gly Glu Ala Leu Ile Val Gly Leu Cys
 340 345 350

Arg Phe Thr Glu Thr Trp Leu Ala Thr Lys Val Phe Pro Asp Phe Arg
 355 360 365

Asp Leu Lys Glu Arg Thr Ala Pro Leu Gln Pro Tyr Phe Asp Asp Pro
 370 375 380

Asp Val Gln Thr Tyr Leu Asp Ala Ile Val Glu Leu Pro Ser Asp Leu
 385 390 395 400

Met Pro Thr Pro Leu Pro Val Glu Pro Leu Glu Val Arg Ser Ser Leu
 405 410 415

Leu Ala Lys Glu Leu Pro Thr Pro Ala Thr Pro Gly Val Ala Pro Pro
 420 425 430

Pro Arg Arg Arg Arg Arg Asp Arg Ser Glu Arg Pro Ala Arg Thr Ala
 435 440 445

Lys Arg Leu Pro Leu Pro Trp Ile Gly Leu Gly Val Val Val Val Leu
 450 455 460

Gly Gly Gly Thr Gly Val Trp Ala Trp Arg Ser Arg Ser Asn Ser Thr
 465 470 475 480

Pro Pro Thr Pro Pro Pro Val Val Gln Thr Leu Pro Glu Ala Val Pro
 485 490 495

Ala Pro Ser Pro Ala Pro Val Thr Val Ala Leu Asp Arg Ala Gln Ala
 500 505 510

Glu Thr Val Leu Gln Asn Trp Leu Ala Ala Lys Ala Ala Ala Leu Gly
 515 520 525

Pro Gln Tyr Asp Arg Asp Arg Leu Ala Thr Val Leu Thr Gly Glu Val
 530 535 540

Leu Gln Thr Trp Gln Gly Phe Ser Ser Gln Gln Ala Asn Thr Gln Leu
 545 550 555 560

Thr Ser Gln Phe Asp His Lys Leu Thr Val Asp Ser Val Gln Leu Ser
 565 570 575

Asp Gly Asp Gln Arg Ala Val Val Gln Ala Lys Val Asp Glu Val Glu
 580 585 590

Gln Val Tyr Arg Gly Asp Gln Leu Leu Glu Thr Arg Arg Asp Leu Gly
595 600 605

Leu Val Ile Arg Tyr Gln Leu Val Arg Glu Asn Asn Ile Trp Lys Ile
610 615 620

Ala Ser Ile Ser Leu Val Arg
625 630

<210> 6
<211> 1390
<212> DNA
<213> Synechococcus PCC7942

<400> 6
ctcgatactt gggagttgaa cacagagtag tagtctaagt aacaactgct cgtgagcaat 60
ttgctacact ttttaccaaa ttttgagctc agttttcgcg aaaactggga tgttgagttg 120
aaccctcagc agcaaaattg taccgcctga gacttttacc gttttattcg gccatctggg 180
aacaatcgcc ctggagctta ttgtgacctc taccogtact gccgttattg ccttggttaga 240
acgctatttc gagctgtcgg cagcgcgagc agcagaggtc ttgcagcaac tgcgatcgca 300
ccaccctgaa gcctggattt atcccgccac agtcgaggcg atttaccaag gccgttaccg 360
ctgggtgtcg atgcacaaa tccttgctct gtggcagcgg cgcgggcaga tcaactgcc 420
cttcagtga gactatgagc gcttggtgct cgggtgaagtt ccagagcaac ccgatcgcat 480
caatgttgag acgcggtctc ctgcgatcgc catgacctg ccttgggtgc cagaacagcc 540
tggaagaagca ttcgtgccag cgcaagatca gtcgggttta actgagcgcc tttataaaac 600
gttgggtcaaa gcgggcagcg attgcgctgg gtaggcttag aacagttgcc atccaaactt 660
gagagtgccc gttcggccag ccaagagaat tccaagagcc ttccagaacg gacaacaatt 720
ctgctctaca atcaagccc agtgaagagg cggcgggcta ttggctgaat ggcaaaaaac 780
atcattcttt cagcaatcgt gggttatacc tacgacaaaa ttgacctatt cttaacttct 840
gcaactcgtg acacctcagc agatattctt ttaattgcat caagtccttc agcccaactc 900
cgtcatcagt tattgagttc acctcgggtc aaactcgttg atgtgaacct tcaagggtgaa 960
ccagctgaaa tggatatttc cggtttcttt attgccaagg agattttggc gagaatcgaa 1020
gcagatgaaa ttctcttgag cgatgctcgc gatgtctatt tccaatctga cccttttggg 1080
gtccaagggg ttttatttgc cgaggaacct cagctaactc caaactgtaa agtcaatagc 1140
agctggataa aaaaatactt aggagaggat gagtttcaag ccatttctcc taatccaatt 1200

ctctgcgggg gcaaccatgt gctggatgcc accaaggcct ttagcctgac gttgaccaca 1260
ccagaagaaa ttgttgggct gcccagagagt ttgctggcct tggcggctca agctgctcaa 1320
gccgctggtg aaacagaggc aacacccgaa gccggccctt ggcgaatcac cctcgacttc 1380
ccaagctttg 1390

<210> 7
<211> 152
<212> PRT
<213> Synechococcus PCC7942

<400> 7

Met Gly Thr Ile Ala Leu Glu Leu Ile Val Thr Ser Thr Arg Thr Ala
1 5 10 15

Val Ile Ala Leu Leu Glu Arg Tyr Phe Glu Leu Ser Ala Ala Arg Ala
20 25 30

Ala Glu Val Leu Gln Gln Leu Arg Ser His His Pro Glu Ala Trp Ile
35 40 45

Tyr Pro Ala Thr Val Glu Ala Ile Tyr Gln Gly Arg Tyr Arg Trp Val
50 55 60

Ser Ile Ala Gln Ile Leu Ala Leu Trp Gln Arg Arg Gly Gln Ile Asn
65 70 75 80

Cys His Phe Ser Ala Asp Tyr Glu Arg Leu Leu Leu Gly Glu Val Pro
85 90 95

Glu Gln Pro Asp Arg Ile Asn Val Glu Thr Arg Leu Pro Ala Ile Ala
100 105 110

Met Thr Leu Pro Trp Val Pro Glu Gln Pro Gly Glu Ala Phe Val Pro
115 120 125

Ala Gln Asp Gln Ser Gly Leu Thr Glu Arg Leu Tyr Lys Thr Leu Val
130 135 140

Lys Ala Gly Ser Asp Cys Ala Gly
145 150

<210> 8
 <211> 0
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Synthetic

<220>
 <221> misc_feature
 <223> Intentionally omitted.

<400> 8
 <210> 9
 <211> 2406
 <212> DNA
 <213> Arabidopsis thaliana

```

<400> 9
atggaagctc tgagtcacgt cggcattggt ctctcccat tccaattatg ccgattacca      60
ccggcgacga caaagctccg acgtagccac aacacctcta caactatctg ctccgccage      120
aaatgggccc accgtcttct ctccgacttc aatttcacct ccgattcctc ctccctctcc      180
ttcgccaccg ccaccaccac cgccactctc gtctctctgc caccatctat tgatcgtccc      240
gaacgccacg tccccatccc cattgatttc taccaggat taggagctca aacacatttc      300
ttaaccgatg gaatcagaag agcattcgaa gctagggttt cgaaaccgcc gcaattcggt      360
ttcagcgacg acgctttaat cagccggaga cagattcttc aagctgcttg cgaaactctg      420
tctaactctc ggtctagaag agagtacaat gaaggctctc ttgatgatga agaagctaca      480
gtcatcactg atgttccttg ggataagggt cctggggctc tctgtgtatt gcaagaaggt      540
ggtagagact agatagttct tcgggttggt gaggctctgc ttaaggagag gttgcctaag      600
tcgtttaagc aagatgtggt tttagttatg gcgcttgctt ttctcgatgt ctcgagggat      660
gctatggcat tggatccacc tgattttatt actggttatg agtttggtga ggaagctttg      720
aagcttttac aggaggaagg agcaagtagc cttgcaccgg atttacgtgc acaaattgat      780
gagactttgg aagagatcac tccgcgttat gtcttgagac tacttggttt accgcttggt      840
gatgattacg ctgcgaaaag actaaatggt ttaagcgggtg tgcggaatat tttgtggtct      900
gttgaggagg gtggagcatc agctcttggt ggggggttga cccgtgagaa gtttatgaat      960
gaggcgtttt tatgaatgac agctgctgag caggttgatc tttttgtagc taccccaagc     1020
aatattccag cagagtcatt tgaagtttac gaagttgcac ttgctcttgt ggctcaagct     1080
tttattggta agaagccaca ccttttacag gatgctgata agcaattcca gcaacttcag     1140

```

caggctaagg taatggctat ggagattcct gcgatgttgt atgatacacg gaataattgg	1200
gagatagact tcggtctaga aaggggactc tgtgcactgc ttataggcaa agttgatgaa	1260
tgccgtatgt ggttgggctt agacagtgag gattcacaat ataggaatcc agctattgtg	1320
gagtttgttt tggagaattc aaatcgtgat gacaatgatg atctccctgg actatgcaaa	1380
ttgttggaaa cctgggttggc aggggttgtc tttcctaggt tcagagacac caaagataaa	1440
aaatttaaac tcggggacta ctatgatgat cctatggttt tgagttactt ggaaagagtg	1500
gaggtagttc agggttctcc tttagctgct gctgcagcta tggcaaggat tggagccgag	1560
catgtgaaag ctagtgtat gcaggcactg cagaaagttt ttccttcccg ctatacagat	1620
agaaactcgg ctgaacccaa ggatgtgcaa gagacagtgt ttagtgtaga tcctgttggt	1680
aacaatgtag gccgtgatgg tgagcctggg gtctttattg cagaagctgt aagaccctct	1740
gaaaactttg aaactaatga ttatgcaatt cgagctgggg tctcagagag tagcgttgat	1800
gaaactactg ttgaaatgtc cgttgctgat atgttaaagg aggcaagtgt gaagatccta	1860
gctgctgggtg tggcaattgg actgatttca ctgttcagcc agaagtattt tcttaaaagc	1920
agctcatctt ttcaacgcaa ggatatgggt tcttctatgg aatctgatgt cgctaccata	1980
gggtcagtca gagctgacga ttcagaagca cttcccagaa tggatgctag gactgcagag	2040
aatatagtat ccaagtggca gaagattaag tctctggctt ttgggcctga tcaccgcata	2100
gaaatgttac cagaggtttt ggatgggcga atgctgaaga tttggactga cagagcagct	2160
gaaactgcgc agcttgggtt ggtttatgat tatacactgt tgaaactatc tgttgacagt	2220
gtgacagtct cagcagatgg aaccctgtct ctggtggaag caactctgga ggagtctgct	2280
tgtctatctg atttggttca tccagaaaac aatgctactg atgtcagaac ctacacaaca	2340
agatacgaag ttttctggtc caagtcaggg tggaaaatca ctgaaggctc tgttcttgca	2400
tcataa	2406

<210> 10
 <211> 3667
 <212> DNA
 <213> *Arabidopsis thaliana*

<400> 10	
tgttctgcat taaggagaat acaattataa gcaatttgtc ttgatttcaa caagattttg	60
cttggctata ggattcattg gctctgtttg cttttacatt tacatgtcat aatagtttcg	120
aattttacac atttcagttg gatgttaaga aaagagaggg aattgatggg gttttgtggg	180
tttaaacttt aaagtagtca agaattaagt cattggttta ctggtgctct atatgtgtaa	240

aatgaaggca actccaacgg ttcttaggtg gaatagatta tttagacgat ttaacatcat	300
aaagtccgtg gcgactgtaa catcatagat tgttttttat ttttttcagt agctgggtgat	360
gttttttgat ttaacttata ctactcaaaa tcaaaattcc ataaacccta gacgaccaaaa	420
cagtctcttc aatatgtaaa acagaacaaa gttttttag tagcctaataa agacactccc	480
atggaagctc tgagtcacgt cggcattggc ctctcccat tccaattatg ccgattacca	540
ccggcgacga caaagctccg acgtagccac aacacctcta caactatctg ctccgccagc	600
aaatgggccc accgtcttct ctccgacttc aatttcacct ccgattcctc ctctcctcc	660
ttcgccaccg ccaccaccac cgccactctc gtctctctgc caccatctat tgatcgctcc	720
gaacgccacg tccccatccc cattgatttc taccaggtat taggagctca aacacatttc	780
ttaaccgatg gaatcagaag agcattcgaa gctagggttt cgaaaccgcc gcaattcggc	840
ttcagcgacg acgctttaat cagccggaga cagattcttc aagctgcttg cgaaactctg	900
tctaactctc ggtctagaag agagtacaat gaaggctctc ttgatgatga agaagctaca	960
gtcatcactg atgttccttg ggataaggta atttcgattt cggaataata aagtttcttc	1020
gttttaattt catgaattgg ataaaggaag gaacttttat ctagtgaagg ttcttggggc	1080
tctctgtgta ttgcaagaag gtggtgagac tgagatagtt ctccgggttg gtgaggctct	1140
gcttaaggag aggttgccca agtcgtttta gcaagatgtg gtttttagtta tggcgcttgc	1200
gtttctcgat gtctcgagg atgctatggc attggatcca cctgatttta ttactgggta	1260
tgagtttggt gaggaagctt tgaagctttt acaggtagtt tgacttgctt tggtaatttg	1320
acgagcgttg gctttataag aactttcttg atttgatact ttgttattga gtcttggtga	1380
ggaggaagga gcaagtagcc ttgcaccgga ttacgtgca caaattgatg agactttgga	1440
agagatcact ccgcgttatg tcttggaagt acttggttta ccgcttggtg atgattacgc	1500
tgcgaaaaga ctaaattggt taagcgggtg gcggaatatt ttgtggtctg ttggaggagg	1560
tggagcatca gctcttggtg ggggttgac ccgtgagaag tttatgaatg aggcgttttt	1620
atgaatgaca gctgctgagc aggtatacag tttagatacc ttttttaaat ttcttttagca	1680
tgatataact ttaggtttct cattttaatg tatgttggtg ggtagggtga tcttttgta	1740
gctaccccaa gcaatattcc agcagagtca tttgaagttt acgaagttgc acttgctctt	1800
gtggctcaag cttttattgg taagaagcca caccttttac aggatgctga taagcaattc	1860
cagcaacttc agcaggctaa ggtaatggct atggagattc ctgcgatgtt gtatgataca	1920
cggaataatt gggagataga ctccggtcta gaaaggggac tctgtgcact gcttataggc	1980

aaagttgatg aatgccgtat gtggttgggc ttagacagtg aggattcaca atataggaat	2040
ccagctattg tggagtttgt tttggagaat tcaaatcgtg atgacaatga tgatctccct	2100
ggactatgca aattgttggg aacctgggtg gcaggggttg tctttcctag gttcagagac	2160
accaaagata aaaaatttaa actcgggggac tactatgatg atcctatggg tttgagttac	2220
ttggaaagag tggaggtagt tcaggggttct ccttttagctg ctgctgcagc tatggcaagg	2280
attggagccg agcatgtgaa agctagtgtc atgcaggcac tgcagaaagt ttttccttcc	2340
cgctatacag atagaaactc ggctgaaccc aaggatgtgc aagagacagt gtttagtgta	2400
gatcctgttg gtaacaatgt aggccgtgat ggtgagcctg gtgtctttat tgcagaagct	2460
gtaagacctt ctgaaaactt tgaaactaat gattatgcaa ttcgagctgg ggtctcagag	2520
agtagcgttg atgaaactac tgttgaaatg tccgttgctg atatgttaaa ggaggcaagt	2580
gtgaagatcc tagctgctgg tgtggcaatt ggactgattt cactgttcag ccagaagtat	2640
tttcttaaaa gcagctcatc ttttcaacgc aaggatatgg tttcttctat ggaatctgat	2700
gtcgtacca taggtatgat taaatgatgc aattttcata tatctgcatt gctcaaaata	2760
tgttgtttt gtgagctaag aacatagttc ccacttaata catgtcccaa aagttgtacc	2820
aagattaaca agttgctgag taaatttcac taattatgct gcttgaattt tttgatcaaa	2880
ctgtagacag aaatgtaaat ttcactctca acatttctgt ttagaataac gtaggattag	2940
agattgcctt agtgtggctt tgtccaactt ttctttcctt gatttttttc ttttcgattt	3000
agggtcagtc agagctgacg attcagaagc acttcccaga atggatgcta ggactgcaga	3060
gaatatagta tccaagtggc agaagattaa gtctctggct tttgggcctg atcaccgcat	3120
agaaatgtta ccagaggtga gggaaataaat ctacaattca atcaattgtg tgaaaactgt	3180
tggacatgat tatagtctgg tgccttgttt gattctgtta tttatagggt ttggatgggc	3240
gaatgctgaa gatttggact gacagagcag ctgaaactgc gcagcttggg ttggtttatg	3300
attatacact gttgaaacta tctgttgaca gtgtgacagt ctcagcagat ggaacccgtg	3360
ctctggtgga agcaactctg gaggagtctg cttgtctatc tgatttggtt catccagaaa	3420
acaatgctac tgatgtcaga acctacacaa caagatacga agttttctgg tccaagtcag	3480
ggtggaaaat cactgaaggc tctgttcttg catcataata tactcatatg tagcatgtct	3540
gagcttgca gattctcttt gttctgtaaa ttctctctct aagttagtgt ttataaatga	3600
acacaaaaaa attaacgttc ttggcacacc cttttccttg atctaaacta taacataagg	3660
gctacaa	3667

<210> 11
 <211> 7980
 <212> DNA
 <213> Arabidopsis thaliana

```

<400> 11
actgtaaatt ttgataaata aaaaaaaaca aaaaaaagat cgccaaatca tatttcatac      60

talcagatatt aaacaatata atttggtcga cgatacagaa atattttacc tcacaggaag      120

agggttgcga gaaggagcca tggatgtgtt tgttcgagtc gagttgcttt gttgtaagta      180

ggtaattgca agaaacttga gttgtctata aagctttgga atacttctct ttatatatac      240

gtttacaaca attttttttt tttttttttt tctattttta caacaaattg ttttttatta      300

taataataaa cttaaacgaa aataaataat atctctttgt tctatttctt aaaaaagaaa      360

ttagcttgta gtacttcaac gtatcttaac tcttttagtct ttagtaggta tatatcatct      420

atatttttat tttttttttt tttatattac gattatagtg tacgtacgta tttattaatc      480

aaaaataact tggtagaagt aaaaagaaaa tgattttttt tttactcagt gatcagtttt      540

acgtttattc aaaaataagt tgtagtttcc ttcttaatat tcaagttata tgactaaaaa      600

ttgggtcggtt aatttactat taagattaat cggaaactct agttagatca cgagataatc      660

atcacgtgga gaaacatttg gttcttgtca cgtggagaaa acgttaagct tattttttac      720

ttctttatta tatttttgag gaaatgggtg aaagaaagag agtggtttaa atgtgaatgc      780

gctcgtagtt aggtggaggt taatgggtag gagggtaggt catatgtgta ttagtgatgg      840

ataaaaatta aaaacataaa aaaaacttca agctgtaaat aatctaataa aagaacatag      900

aatataatc aaagaacat ttaactaat aaatactttc gattcaaata gcatatttct      960

aagttccaag aatagctatc ctctatccac atgttacatt ttttttttct ttttcacatc     1020

catatagttt ttaaaataat tttctagatg gtatttttta ttcgacattt ttttttcctt     1080

ttagatttac tgattataat ttatttagaa ataaatgata cgactgtcgt ttctacaaaa     1140

ctgaaatttg caaacattgg accaaaaagc gaaaccttaa tcaattgaaa cgacaacggt     1200

ctttagtatg tttttggaca tacaaagtac acataagatg ttccctcact cttcgattgt     1260

ttcttaacct aatataatta agcaatattg aacttgagtc actcaatgct gcaccgaagg     1320

agcctttaga ttttgagcaa attcatgaga gtttagcttc tcattcatca ctctgaattt     1380

ctcttttatc ctctttatct gtccaaaaca tgacacataa cataatgtta gttctcctgc     1440

atacttccaa tggcaaatag aaaaaagaga cattgatcat agaagtcagt ttggtttacc     1500

cttctgagct cgatctctgt gctccgtttc ttttgatcaa gtgattgccg gagattcgtg     1560

```

atgtcgaaga	tactatcgag	gtcgtcttca	aatgcgtttt	ccaactcttc	ccggagaaga	1620
gcaggtaact	tatcaacgat	gggcattaga	agaaaacagt	tgaactgcag	aacaaaagaa	1680
aacacagata	caaacttttt	aaaagaaaag	tcatttttaa	agcaagaaga	atctgagtaa	1740
aaactgaagt	aggagcaaac	ctttaactca	gcagaggcga	gaaagtactc	tcgtatgccc	1800
tggaatatct	gttggacca	tgcgtacaca	attctctcag	aggaaggagc	aagcttgccg	1860
ttccaaagtg	tgctatctag	aagatcagcc	aaccgcattt	ctgttgctctg	aatactggaa	1920
cctgaatcga	tgtttgaggc	gagatggctt	agctttacat	ctgatcttga	cttgggtgct	1980
gttgtgccac	ctaatagcac	ttgggggaaga	ctaaatccta	tggcattacc	tgatgtcgta	2040
ttatgctctg	ttccaccaa	tgagtccaag	aattgacgta	gaccagctcg	gttctacata	2100
acattgagaa	acgaaaacta	ctcaatcaga	aacggatact	tgatgggatg	tacacaactc	2160
aattggattg	aaacagagct	atagggctgt	agcaatgacc	ttgttgtgaa	gagaccatgt	2220
aacatagcga	gttgtacttg	ctaaatcctc	catacatctg	caaacaatat	aaaatccaaa	2280
gggtgatcaa	tcactaaagc	tcactagaac	acaggtagga	ggcaccgaca	tggtagaagc	2340
aggaattgga	aatagaatta	cttgtcacga	catgattttt	ctgtggactc	cacaaaactg	2400
ttgaatgctg	aagcaacccg	cttgagaaac	acctcatgcc	cacttaaata	ttcaccttct	2460
ttctattcaa	atttagaaca	tacatcaaaa	aatttgctgg	aaagggatca	tgagtatgat	2520
accgtcaaac	caaagaaaac	agtacctacc	tgaagaagat	atacagaaat	tggaagcaat	2580
ctcttgagaa	tgtgtagaag	cctcgccctt	aactatatca	acgcaaaaca	aacgaaaatg	2640
agaactggaa	aaaactttct	gtatggaaag	agaaacatgt	gaataacaaa	atttcagatg	2700
aaagtattcc	caaacatagt	ttctgtaagc	agaacatggt	tactcgataa	ctcttatgca	2760
caaataagtt	ccagcaaata	tcaaaaactga	atggtagtat	gatttcaata	tataacgtta	2820
tatttcattt	ttttttttac	gtacagtaca	ccttaactaa	ttagtaaaat	tgctttccat	2880
cctccacgaa	agaaaaagaa	aaaagtagct	atatctatgt	cacctgatga	aggaaagggt	2940
caaacgtctc	acgagccttc	gcaactgcta	taacacaagc	tgttctacaa	cagcaaataa	3000
gagaaagaga	ataagaggcc	atagaaaaca	tgacaaacgt	tgacagctcag	attagatact	3060
gaaaggggtc	tgggatgcaa	agacaataaa	ttgagaagtg	tggtgcatgt	cagtcaatcc	3120
tatgatacct	ggaatagttt	gttccatcat	gaatatcctc	aactccacat	gcattttacaa	3180
tttcctccct	cgttattggg	ggacatttga	tagcaccaac	tagaaaacga	aactcagcca	3240
tggcacgggtg	atattgtgca	cccccataga	gacgcacccc	tgcatcttgt	aaaatgaaag	3300

ataatctggg	tatgggtctct	cataattctt	gaagggtccaa	cgaagtatct	cttttatttg	3360
tttccaatac	attattcttt	ggcacatatg	tttcatgcgg	tcaaatttat	cttccatcat	3420
attataatcc	atgtacaaga	acaagacaac	tggatttgaa	gaccatgccc	agcttgctct	3480
ataaagtcca	acaatattct	gcttcaggga	aagacttacc	ggtattagct	tatgtgaaaa	3540
ctggagacca	tcagtaccaa	caaagtctcc	tccttggtgc	ctttcatctt	gcagtgctct	3600
acctgaaaaa	cacatgaga	aattattaac	aatcaaagaa	cccaacataa	agagaatgct	3660
gttataaaat	gtgcttctgc	cagtaaccaa	agtatcatga	ccaatgattg	attgattagc	3720
atacatcatt	ccatgtgtaa	tcatcgcagt	ctggtgaccc	agtcgaattg	aacaatatgc	3780
atttaactaa	actgattttg	caaaagtcca	atttaacaac	accagaaaac	aagaaaagtt	3840
tatgccaaag	aagttgacta	gcagagaaca	gagcagtaac	attaccaa	ttatctggag	3900
gggccacaac	tgttcccttc	aataacagcg	ataactgatc	aagaaaaata	taaacaaaac	3960
aggtgagaaa	acacagcact	gatcaatact	aacaaaggta	cttcgtacgt	caatcagaaa	4020
atatgacgca	gcaattttta	agtcttaagg	gcatccaaca	caaaaagttt	acagccattc	4080
tgaatttgta	gcaagtccta	gatatcattt	actgtagcat	aattttatat	gtgtcagtaa	4140
tcaataaaca	aatttgtttt	tatgtgtcag	tagttaataa	accaaaaaaa	aagagaagtt	4200
tacacaaatg	aacttgttgt	aattatacaa	aaactattaa	tccacgagtc	caggcaaaaa	4260
tgaaaaggta	tgggaagggtg	taaatagaaa	tctaaaaaaa	cgaaatgctc	tctacagtta	4320
ccttggttaa	gaagagatca	tggaaagtcc	tgcctctctc	tttgagtttt	gcttcatcca	4380
aagagctgca	ttgaaaggaa	ttattcaacc	tccaatgagt	tatatcttct	ataaatcagt	4440
agctaacaat	taaactgcct	aaaatcaagt	agacattttc	agacaaaaca	aattgcgacc	4500
taagttcctt	gctcacggta	tccagctttc	tgactgtact	gcggtactcc	tttcctaaca	4560
gtggaatgat	caatggaaca	ctctctttgt	acctggaaag	agaagggcat	caagactaca	4620
gcgaaaagta	aactacaata	gaaacagagg	ctggaaaaat	cagagttaaa	acaacagtta	4680
taccttttcc	agagtagttc	ttccagaaac	aacctcagtt	tactgatgcc	aatcctactc	4740
ttttcctggt	ttgtcagtaa	acggcccaac	ttcttctcta	aagatgcaat	gtcttccatt	4800
tctctaagtg	acacagcctg	taataaaaac	cacacatagt	ttagaaaaag	acctgtttta	4860
cttgtttaag	gaatcagaca	gcagagcaga	gacctgtttg	aactcgtcac	tagacttata	4920
cactgaatcc	tgtccatagc	caactcttcc	agaaggcaca	gacgtgaaaa	aaggagaatc	4980
gcccaataag	gagctgtcaa	gtgcgcttgc	aggaggtgag	agaaagactt	ccacgtcaga	5040

tgaacatgag aattgagggga ttttagtgtc aagcttttgta gaaacaacaa ttgtcctaga	5100
aagctcagga tcaacctaca tgaacgagaa acaaacttta acaaaaataa agacaagggtt	5160
agacgcaatg gagttacgtc aagcaacgta cttgcatcac tatccttcga gtggttgcaa	5220
tgtctcagtc actgctatct tcgaggcata aaatgatgaa ctcttttggtg tgcatctttg	5280
ctcggactag agcttccaca gcccggtgctt gaacctaaaga aaaagaacaa gtaaccact	5340
ctcaaataaa gcaaaaccaa aacatgaaat cagccacgga attggctgga agccataaga	5400
aaaaacaacc tgaagagctc gggtttttcag tcctggtgca ggagcaataa gtccagggtg	5460
atcaatgatg gtaagggttg gacaatactt atactggact ttcacaataa tctcctttgc	5520
agagaatggg ctacatggct cttgctccag cctcatgttc tcagcctcaa tatatgccta	5580
actccaaatc atataacaaa tttcgtaaac atgagcattt cgcttctcta caataaacct	5640
aagtacttgt gtttctcaac attcgtcaaa atcttcccag aatttatacg cagaaacaag	5700
caattgaaga agcacaagta ataataataa caaaacacct gaatttgatga gagagatttg	5760
ggaagagaaa cggaaggatc atcatcagat ccgagatgac aaagcgggaa ttgacactga	5820
ggatcgtact tcatatggag agtaatcggc cgacgagtct tggttccgcc gccgacatgg	5880
ttaaattgaa accccataag agcttccaca agcgcacttt taccgtcggg ctgctgtccc	5940
accacaagaa ccgcgggtgc ttogaacggc gtctccaatt cctgcgccaa agcgtgtaac	6000
tcgttgtaag cttcgtaaag actccaccgc tcctcaatcg cagcgtcgtc ctcttccgcc	6060
atttctcaa ccgtcacga ttttgctgat acttccgcc tctgtcttta cgaaaatgag	6120
caagaggaag agtaagagta agagagtgtc tcttatttct tctactcttt agttttcgtc	6180
gccgttcctt tttccgccat ggaattagca gatacggcta atttcaattt ttgtcaaaag	6240
aaatattttt tgtgttttaa tctcacgcgc atccatggcg cgttgagtca acgttgtaat	6300
agttctccgc taaatttaaa taaaagagcg cgtaaggaga gagtttaagg atttttttt	6360
tttggtcggc aaatacaaag gatttgcttt gtcttgacca atagtatatg cagaaatatt	6420
atctcaaagg atttgtgata actatgtagt acagaattgt gattattgga tgagaaacca	6480
gaaatatttt gagcaaatga cgacttgta atttactatt ttttcatttc ttaaagggtct	6540
ctcttggtgta actatgatta aaattgaaat agtgactttt attggttacga catggaacaa	6600
atcaacgagt tctattgtta aagagagaca ttgatgaatg taacaaaact gtggcttaga	6660
agccgaaagg agacttagtt cgggtccctc cttcacgta ttgctcgttc cattttctca	6720
attcgttcat tgtcgtcgcg tcgtatgcca ctgacggact tacctgcaaa ttacattaca	6780

atgacgcaat ttcgataatg caaacaccag gggaaaaaac atgaatagag atgatgatga	6840
tgttttttaa gagattgatc aataccttag ctttggattg aatgaagtcg tccaaactca	6900
gtggtcgtag atcaggggac gcatttggtta ccgagtcctg ataattcgac gtttcaaaag	6960
catggagtga gtacaaaaat tatttttcgt aacaacagaa atcaactgtg tgggtttatg	7020
catgtcctta ccttggtttc ttcttgtaac aattcttgaa caggtctgta tgcagctgct	7080
atgcatagat tctgcaatgt aagaaaagaa aaggaatcag aactactgtg ttgaatcata	7140
ctcgaacttg taaatgaaac ccggaatgac caaaccttta gatcgcttcc tgaatatcct	7200
tcggtttcct ttgcaagttt atcaaactcg aaaccagttt caagattttc tgggtgtcaga	7260
aatatcttca atatatctca ccggttttcc gcactctggt aatccacata tctcctataa	7320
acacaagcct caatacaatt atcgaaaaga tacaatatatt ccaaaggaga aattacttga	7380
aagcttaaat taccgtcttg gtagcctacg aatgacagcg tcatcaagat caaaaggtcg	7440
gttggtggca ccgagaaatga gaatcctttg gctatctttt gatctgagtc catcccaagc	7500
tgccataaac tcattttctca ttcttcgtgt tgctcgtgc tcaaaagcac caccacgagc	7560
accaacaaa ctgtcaacct atacgacaac aaaataaatt acagttagtc cttgagtaac	7620
acattttacg catcacaaaa gtattcctca taaaaagcaa taaccgaaat tgaaaagtga	7680
tataaagcta aacaatttct cacctcatca acaaatataa tgacgggggc tagtttgctt	7740
gcaaaagaga acaaagcctt cgtgagcttc tctgcatctc caaaccactg tgccaaacaa	7800
tggacgaaat tgacttaaat cagaaccaat cagaggtaaa gttggaaaga gatttactct	7860
aagttacaat cggcattgac aataataagt cgatgaccgg ggtggaaaag tttttcttat	7920
gtcattagat attctcctta tttatatgaa gatgtttaca aagtggaata tcaacgtgac	7980

<210> 12
 <211> 2678
 <212> DNA
 <213> Arabidopsis thaliana

<400> 12	
gaaattagcc gtatctgcta attccatggc ggaaaaagga acggcgacga aaactaaaga	60
gtagaagaaa taagagacac tctcttactc ttactcttcc tcttgctcat tttcgtaaga	120
gacgatggcg gaagtatcag caaaatcggg gacggttgag gaaatggcgg aagaggacga	180
cgctgcgatt gaggagcggg ggagtcttta cgaagcttac aacgagttac acgctttggc	240
gcaggaattg gagacgccgt tcgaagcacc ggcggttctt gtggtgggac agcagaccga	300
cggtaaaagt gcgcttgtgg aagctcttat ggggtttcaa ttttaaccatg tcggcggcgg	360

aaccaagact	cgtcggccga	ttactctcca	tatgaagtac	gacccctcagt	gtcaattccc	420
gctttgtcat	ctcggatctg	atgatgatcc	ttccgtttct	cttcccaa	atctctcaca	480
aattcacgca	tatatggagg	ctgagaacat	gaggctggag	caagagccat	gtagcccatt	540
ctctgcaaag	gagattattg	tgaaagtcca	gtataagtat	tgtccaaacc	ttaccatcat	600
tgatacacct	ggacttattg	ctcctgcacc	aggactgaaa	aaccgagctc	ttcaggttca	660
agcacgggct	gtggaagctc	tagtccgagc	aaagatgcaa	cacaaagagt	tcatcatttt	720
atgcctcgaa	gatagcagtg	actggagcat	tgcaaccact	cgaaggatag	tgatgcaagt	780
tgatcctgag	ctttctagga	caattgttgt	ttctacaaag	cttgacacta	aaatccctca	840
attctcatgt	tcatctgacg	tggaagtctt	tctctcacct	cctgcaagcg	cacttgacag	900
ctccttattg	ggcgattctc	cttttttcac	gtctgtgcct	tctggaagag	ttggctatgg	960
acaggattca	gtgtataagt	ctaatacga	gttcaaacag	gctgtgtcac	ttagagaaat	1020
ggaagacatt	gcattcttag	agaagaagt	gggccgttta	ctgacaaaac	aggaaaagag	1080
taggattggc	atcagtaa	atcagtaa	atcagtaa	atcagtaa	atcagtaa	1140
agagagtgtt	ccattgatca	ttccactgtt	aggaaaggag	taccgcagta	cagtcagaaa	1200
gctggatacc	gtgagcaagg	aacttagctc	tttgatgaa	gcaaaactca	aagagagagg	1260
caggactttc	catgatctct	tcttaaccaa	gttatcgctg	ttattgaagg	gaacagttgt	1320
ggccccctca	gataaatttg	gtgagacact	gcaagatgaa	aggacacaag	gaggagcatt	1380
tgttgggtact	gatgggtctcc	agttttcaca	taagctaata	cagaatgcag	ggatgcgtct	1440
ctatgggggt	gcacaatata	accgtgccat	ggctgagttt	cgttttctag	ttgggtgctat	1500
caaattgtccc	ccaataacga	gggaggaaat	tgtaaatgca	tgtggagttg	aggatattca	1560
tgatggaaca	aactattcca	gaacagcttg	tgttatagca	gttgcaagg	ctcgtgagac	1620
gtttgaacct	ttccttcata	agtttagggc	gaggcttcta	cacattctca	agagattgct	1680
tccaatttct	gtatatcttc	ttcagaaaga	aggtgaatat	ttaagtgggc	atgaggtgtt	1740
tctcaagcgg	gttgcttcag	cattcaacag	ttttgtggag	tccacagaaa	aatcatgtcg	1800
tgacaaatgt	atggaggatt	tagcaagtac	aactcgctat	gttacatggg	ctcttcacaa	1860
caagaaccga	gctgggtctac	gtcaattctt	ggactcattt	ggtggaacag	agcataatac	1920
gacatcaggt	aatgccatag	gatttagtgt	tccccagat	gcattaggtg	gcacaacaga	1980
caccaagtca	agatcagatg	taaagctaag	ccatctcgcc	tcaaacatcg	attcaggttc	2040
cagtatttcag	acaacagaaa	tgcggttggc	tgatcttcta	gatagcacac	tttggaaaccg	2100

caagcttgct ccttcctctg agagaattgt gtacgcattg gtccaacaga tattccaggg 2160
 catacgagag tactttctcg cctctgctga gttaaagttc aactgttttc ttctaattgcc 2220
 catcgttgat aagttacctg ctcttctccg ggaagagttg gaaaacgcat ttgaagacga 2280
 cctcgatagt atcttcgaca tcacgaatct ccggcaatca cttgatcaaa agaaacggag 2340
 cacagagatc gagctcagaa gggtaaagag gataaaagag aaattcagag tgatgaatga 2400
 gaagctaaac tctcatgaat ttgctcaaaa tctaaaggct ccttcggtgc agcattgagt 2460
 gactcaagtt caatattgct taattatatt aggttaagaa acaatcgaag agtgagggaa 2520
 catcttatgt gtactttgta tgtccaaaaa cataactaaag aacgttgctg tttcaagtga 2580
 ttaagggttc gctttttggt ccaatgtttg caaatctcag ttttgtagaa acgacagtcg 2640
 tatcatttat ttctaaataa attataatca gtaaattct 2678

<210> 13
 <211> 777
 <212> PRT
 <213> Arabidopsis thaliana

<400> 13

Met Ala Glu Val Ser Ala Lys Ser Val Thr Val Glu Glu Met Ala Glu
 1 5 10 15

Glu Asp Asp Ala Ala Ile Glu Glu Arg Trp Ser Leu Tyr Glu Ala Tyr
 20 25 30

Asn Glu Leu His Ala Leu Ala Gln Glu Leu Glu Thr Pro Phe Glu Ala
 35 40 45

Pro Ala Val Leu Val Val Gly Gln Gln Thr Asp Gly Lys Ser Ala Leu
 50 55 60

Val Glu Ala Leu Met Gly Phe Gln Phe Asn His Val Gly Gly Gly Thr
 65 70 75 80

Lys Thr Arg Arg Pro Ile Thr Leu His Met Lys Tyr Asp Pro Gln Cys
 85 90 95

Gln Phe Pro Leu Cys His Leu Gly Ser Asp Asp Asp Pro Ser Val Ser
 100 105 110

Leu Pro Lys Ser Leu Ser Gln Ile His Ala Tyr Ile Glu Ala Glu Asn
 115 120 125

Tyr Arg Ser Thr Val Arg Lys Leu Asp Thr Val Ser Lys Glu Leu Ser
 355 360 365
 Ser Leu Asp Glu Ala Lys Leu Lys Glu Arg Gly Arg Thr Phe His Asp
 370 375 380
 Leu Phe Leu Thr Lys Leu Ser Leu Leu Leu Lys Gly Thr Val Val Ala
 385 390 395 400
 Pro Pro Asp Lys Phe Gly Glu Thr Leu Gln Asp Glu Arg Thr Gln Gly
 405 410 415
 Gly Ala Phe Val Gly Thr Asp Gly Leu Gln Phe Ser His Lys Leu Ile
 420 425 430
 Gln Asn Ala Gly Met Arg Leu Tyr Gly Gly Ala Gln Tyr His Arg Ala
 435 440 445
 Met Ala Glu Phe Arg Phe Leu Val Gly Ala Ile Lys Cys Pro Pro Ile
 450 455 460
 Thr Arg Glu Glu Ile Val Asn Ala Cys Gly Val Glu Asp Ile His Asp
 465 470 475 480
 Gly Thr Asn Tyr Ser Arg Thr Ala Cys Val Ile Ala Val Ala Lys Ala
 485 490 495
 Arg Glu Thr Phe Glu Pro Phe Leu His Gln Leu Gly Ala Arg Leu Leu
 500 505 510
 His Ile Leu Lys Arg Leu Leu Pro Ile Ser Val Tyr Leu Leu Gln Lys
 515 520 525
 Glu Gly Glu Tyr Leu Ser Gly His Glu Val Phe Leu Lys Arg Val Ala
 530 535 540
 Ser Ala Phe Asn Ser Phe Val Glu Ser Thr Glu Lys Ser Cys Arg Asp
 545 550 555 560
 Lys Cys Met Glu Asp Leu Ala Ser Thr Thr Arg Tyr Val Thr Trp Ser
 565 570 575
 Leu His Asn Lys Asn Arg Ala Gly Leu Arg Gln Phe Leu Asp Ser Phe
 580 585 590

Gly Gly Thr Glu His Asn Thr Thr Ser Gly Asn Ala Ile Gly Phe Ser
595 600 605

Leu Pro Gln Asp Ala Leu Gly Gly Thr Thr Asp Thr Lys Ser Arg Ser
610 615 620

Asp Val Lys Leu Ser His Leu Ala Ser Asn Ile Asp Ser Gly Ser Ser
625 630 635 640

Ile Gln Thr Thr Glu Met Arg Leu Ala Asp Leu Leu Asp Ser Thr Leu
645 650 655

Trp Asn Arg Lys Leu Ala Pro Ser Ser Glu Arg Ile Val Tyr Ala Leu
660 665 670

Val Gln Gln Ile Phe Gln Gly Ile Arg Glu Tyr Phe Leu Ala Ser Ala
675 680 685

Glu Leu Lys Phe Asn Cys Phe Leu Leu Met Pro Ile Val Asp Lys Leu
690 695 700

Pro Ala Leu Leu Arg Glu Glu Leu Glu Asn Ala Phe Glu Asp Asp Leu
705 710 715 720

Asp Ser Ile Phe Asp Ile Thr Asn Leu Arg Gln Ser Leu Asp Gln Lys
725 730 735

Lys Arg Ser Thr Glu Ile Glu Leu Arg Arg Val Lys Arg Ile Lys Glu
740 745 750

Lys Phe Arg Val Met Asn Glu Lys Leu Asn Ser His Glu Phe Ala Gln
755 760 765

Asn Leu Lys Ala Pro Ser Val Gln His
770 775

<210> 14
<211> 6900
<212> DNA
<213> Arabidopsis thaliana

<400> 14

actgttaaatt ttgataaata aaaaaaaaca aaaaaaagat cgccaaatca tatttccatac	60
tatcagatTT aaacaatata atttggtcga cgatacagaa atattttacc tcacaggaag	120
aggTtgcgca gaaggagcca tggatgtgtt tgttcgagtc gagttgcttt gttgtaagta	180
ggtaattgca agaaacttga gttgtctata aagctttgga atacttctct ttatatatac	240
gtttacaaca attttttttt tttttttttt tctattttta caacaaattg ttttttatta	300
taataataaa cttaaacgaa aataaataat atctctttgt tctatttctt aaaaaagaaa	360
ttagcttgta gtacttcaac gtatcttaac tcttttagtct ttagtaggta tatatcatct	420
atttatttat ttttattttt tttatattac gattatagtg tacgtacgta tttattaatc	480
aaaaataact tggtagaagt aaaaagaaaa tgattttttt tttactcagt gatcagtttt	540
acgtttattc aaaaataagt tgtagtttcc ttcttaatat tcaagttata tgactaaaaa	600
ttggtcgggt aatttactat taagattaat cggaaactct agttagatca cgagataatc	660
atcacgtgga gaaacatttg gttcttgtca cgtggagaaa acgttaagct tattttttac	720
ttctttatta tatttttgag gaaatgggtg aaagaaagag agtggtttaa atgtgaatgc	780
gctcgtagtt aggtggaggt taatgggtag gagggtaggt catatgtgta ttagtgatgg	840
ataaaaatta aaacataaa aaaaacttca agctgtaaat aatctaataa aagaacatag	900
aaatataatc aaagaaccat ttaactaaat aaatactttc gattcaaata gcataatttct	960
aagttccaag aatagctatc ctctatccac atgttacatt ttttttttct ttttcacatc	1020
catatagttt ttaaaataat tttctagatg gtatttttta ttcgacattt ttttttcctt	1080
ttagatttac tgattataat ttatttagaa ataaatgata cgactgtcgt ttctacaaaa	1140
ctgaaatttg caaacattgg accaaaaagc gaaaccttaa tcacttgaaa cgacaacggt	1200
ctttagtatg tttttggaca tacaaagtac acataagatg ttccctcact cttegattgt	1260
ttcttaacct aatataatta agcaatattg aacttgagtc actcaatgct gcaccgaagg	1320
agcctttaga ttttgagcaa attcatgaga gtttagcttc tcattcatca ctctgaattt	1380
ctctttttatc ctcttttatct gtccaaaaca tgacacataa cataatgtta gttctcctgc	1440
atacttccaa tggcaaatag aaaaaagaga cattgatcat agaagtcagt ttggtttacc	1500
cttctgagct cgatctctgt gctccgtttc ttttgatcaa gtgattgccg gagattcgtg	1560
atgtcgaaga tactatcgag gtcgtcttca aatgcgtttt ccaactcttc ccggagaaga	1620
gcaggtaact tatcaacgat gggcattaga agaaaacagt tgaactgcag aacaaaagaa	1680

aacacagata	caaacttttt	aaaagaaaag	tcatttttaa	agcaagaaga	atctgagtaa	1740
aaactgaagt	aggagcaaac	ctttaactca	gcagaggcga	gaaagtactc	tcgtatgccc	1800
tggaatatct	gttggaccaa	tgcgtacaca	attctctcag	aggaaggagc	aagcttgagg	1860
ttccaaagtg	tgctatctag	aagatcagcc	aaccgcattt	ctgttgctctg	aatactggaa	1920
cctgaatoga	tgtttgaggg	gagatggctt	agctttacat	ctgatcttga	cttgggtgtct	1980
gttgtgccac	ctaattgcac	ttggggaaga	ctaaatccta	tggcattacc	tgatgtcgta	2040
ttatgtctctg	ttccaccaa	tgagtccaag	aattgacgta	gaccagctcg	gttctacata	2100
acattgagaa	acgaaaacta	ctcaatcaga	aacggatact	tgatgggatg	tacacaactc	2160
aattggattg	aaacagagct	atagggctgt	agcaatgacc	ttgttggtga	gagaccatgt	2220
aacatagcga	gttgtacttg	ctaaatcctc	catacatctg	caaacaatat	aaaatccaaa	2280
gggtgatcaa	tcactaaagc	tcactagaac	acaggtagga	ggcaccgaca	tggttaagaac	2340
aggaattgga	aatagaatta	cttgtcacga	catgattttt	ctgtggactc	cacaaaactg	2400
ttgaatgctg	aagcaacccg	cttgagaaac	acctcatgcc	cacttaaata	ttcaccttct	2460
ttctattcaa	atttagaaca	tacatcaaaa	aatttgctgg	aaagggatca	tgagtatgat	2520
accgtcaaac	caaagaaaac	agtacctacc	tgaagaagat	atacagaaat	tggaagcaat	2580
ctcttgagaa	tgtgtagaag	cctcgccctt	aactatatca	acgcaaaaaca	aacgaaaatg	2640
agaactggaa	aaaactttct	gtatggaaag	agaaacatgt	gaataacaaa	atttcagatg	2700
aaagtattcc	caaacatagt	ttctgtaagc	agaacatggt	tactcgataa	ctcttatgca	2760
caaataagtt	ccagcaaata	tcaaaactga	atggtagtat	gatttcaata	tataacgtta	2820
tattttcattt	ttttttttac	gtacagtaca	ccttaactaa	ttagtataat	tgctttccat	2880
cctccacgaa	agaaaaagaa	aaaagtagct	atatctatgt	cacctgatga	aggaaaagggt	2940
caaacgtctc	acgagccttc	gcaactgcta	taacacaagc	tggttctaca	cagcaaataa	3000
gagaaagaga	ataagaggcc	atagaaaaca	tgacaaacgt	tcagctcag	attagatact	3060
gaaaggggtc	tgggatgcaa	agacaataaa	ttgagaagtg	tggtgcatgt	cagtcaatcc	3120
tatgatacct	ggaatagttt	gttccatcat	gaatatcctc	aactccacat	gcattttaca	3180
tttcctccct	cgttattggg	ggacatttga	tagcaccaac	tagaaaacga	aactcagcca	3240
tggcacggtg	atattgtgca	ccccataga	gacgcacccc	tcgattctgt	aaaatgaaag	3300
ataatctggg	tatgggtctct	cataattctt	gaagggtcaa	cgaagtatct	cttttatttg	3360
tttccaatac	attattcttt	ggcacatatg	tttcatggcg	tcaaatattat	cttccatcat	3420

attataatcc	atgtacaaga	acaagacaac	tggatttgaa	gaccatgccc	agcttgctct	3480
ataaagtcca	acaatattct	gcttcagggg	aagacttacc	ggtattagct	tatgtgaaaa	3540
ctggagacca	tcagtaccaa	caaagtctcc	tccttggtgc	ctttcatctt	gcagtgtctc	3600
acctgaaaaa	caccatgaga	aattattaac	aatcaaagaa	cccaacataa	agagaatgct	3660
gttataaaat	gtgcttctgc	cagtaaccaa	agtatcatga	ccaatgattg	attgattagc	3720
atacatcatt	ccatgtgtaa	tcatcgagc	ctggtgaccc	agtcgaattg	aacaatatgc	3780
atttaactaa	actgattttg	caaaagtcca	atttaacaac	accagaaaac	aagaaaagtt	3840
tatgccaaaag	aagttgacta	gcagagaaca	gagcagtaac	attaccaaat	ttatctggag	3900
gggccacaac	tgttcccttc	aataacagcg	ataactgatc	aagaaaaata	taaacaaaac	3960
aggtgagaaa	acacagcact	gatcaatact	aacaaaggta	cttcgtacgt	caatcagaaa	4020
atatgacgca	gcaattttta	agtcttaagg	gcatccaaca	caaaaagttt	acagccattc	4080
tgaatttgta	gcaagtccta	gatatcattt	actgtagcat	aattttatat	gtgtcagtaa	4140
tcaataaaca	aatttgtttt	tatgtgtcag	tagttaataa	accaaaaaaa	aagagaagtt	4200
tacacaaatg	aacttgttgt	aattatacaa	aaactattaa	tccacgagtc	caggcaaaaa	4260
tgaaaaggta	tgggaagggtg	taaatagaaa	tctaaaaaaa	cgaaatgctc	tctacagtta	4320
ccttggttaa	gaagagatca	tggaaagtcc	tgctctctct	tttgagtttt	gcttcatcca	4380
aagagctgca	ttgaaaggaa	ttattcaacc	tccaatgagt	tatatTTTTCT	ataaatcagt	4440
agctaacaat	taaactgcct	aaaatcaagt	agacattttc	agacaaaaca	aattgcgacc	4500
taagttcctt	gctcacggta	tccagctttc	tgactgtact	gcggtactcc	tttctaaca	4560
gtggaatgat	caatggaaca	ctctctttgt	acctggaaaag	agaagggcat	caagactaca	4620
gcgaaaagta	aactacaata	gaaacagagg	ctggaaaaat	cagagttaaa	acaacagtta	4680
taccttttcc	agagtagttc	ttccagaaac	aacctcagtt	tactgatgcc	aatcctactc	4740
ttttcctggt	ttgtcagtaa	acggcccaac	ttcttctcta	aagatgcaat	gtcttccatt	4800
tctctaagtg	acacagcctg	taataaaaac	cacacatagt	ttagaaaaag	acctgtttta	4860
cttgtttaag	gaatcagaca	gcagagcaga	gacctgtttg	aactcgtcac	tagacttata	4920
cactgaatcc	tgtccatagc	caactcttcc	agaaggcaca	gacgtgaaaa	aaggagaatc	4980
gccaataaag	gagctgtcaa	gtgcgcttgc	aggaggtgag	agaaagactt	ccacgtcaga	5040
tgaacatgag	aattgagggg	ttttagtgtc	aagctttgta	gaaacaacaa	ttgtcctaga	5100
aagctcagga	tcaacctaca	tgaacgagaa	acaaacttta	acaaaaataa	agacaagggt	5160

agacgcaatg gagttacgtc aagcaacgta cttgcatcac tacccttcga gtggttgcaa	5220
tgctccagtc actgctatct tcgaggcata aaatgatgaa ctctttgtgt tgcattcttg	5280
ctcggactag agcttcacaca gcccggtgctt gaacctaaaga aaaagaacaa gtaaccact	5340
ctcaaataaa gcaaaaccaa aacatgaaat cagccacgga attggctgga agccataaga	5400
aaaaacaacc tgaagagctc gggttttcag tcctgggtgca ggagcaataa gtccagggtg	5460
atcaatgatg gtaaggtttg gacaatactt atactggact ttcacaataa tctcctttgc	5520
agagaatggg ctacatggct cttgctccag cctcatgttc tcagcctcaa tatatgccta	5580
actccaaatc atataacaaa tttcgtaaac atgagcattt cgcttctcta caataaacct	5640
aagtacttgt gtttctcaac attcgtcaaa atcttcccag aatttatacg cagaacaag	5700
caattgaaga agcacaagta ataataataa caaacacct gaatttgatg gagagatttg	5760
ggaagagaaa cgggaaggatc atcatcagat ccgagatgac aaagcgggaa ttgacactga	5820
ggatcgtact tcatatggag agtaatcggc cgacgagtct tggttccgcc gccgacatgg	5880
ttaaattgaa accccataag agcttcacaca agcgcacttt taccgtcggg ctgctgtccc	5940
accacaagaa ccgccggtgc ttcgaacggc gtctccaatt cctgcgcca agcgtgtaac	6000
tcgttgtaag cttcgtaaag actccaccgc tcctcaatcg cagcgtcgtc ctcttccgcc	6060
atttcctcaa ccgtcaccga ttttgctgat acttccgcc tctgtctctta cgaaaatgag	6120
caagaggaag agtaagagta agagagtgtc tcttatttct tctactcttt agttttcgtc	6180
gccgttcctt tttccgcat ggaattagca gatacggcta atttcaattt ttgtcaaaag	6240
aaatattttt tgtgttttaa tctcacgcgc atccatggcg cgttgagtca acgttgtaat	6300
agttctccgc taaattttaa taaaagagcg cgtaaggaga gagtttaagg attttttttt	6360
tttggtcggc aaatacaaag gatttgcttt gtcttgacca atagtatatg cagaaatatt	6420
atctcaaagg atttgatgata actatgtagt acagaattgt gattattgga tgagaaacca	6480
gaaatatttt gagcaaatga cgacttgta atttactatt ttttcatttc ttaaagggtc	6540
ctcttgatga actatgatta aaattgaaat agtgactttt attgttacga catggaacaa	6600
atcaacgagt tctattgtta aagagagaca ttgatgaatg taacaaaact gtggcttaga	6660
agccgaaagg agacttagtt cgggtccctc cttcacgta ttgctcgttc cattttctca	6720
attcgttcat tgtcgtcgcg tcgtatgcc aagacggact tacctgcaaa ttacattaca	6780
atgacgcaat ttcgataatg caaacaccag gggaaaaaac atgaatagag atgatgatga	6840
tggttttttaa gagattgatc aataccttag ctttggattg aatgaagtcg tccaaactca	6900

<210> 15
 <211> 2319
 <212> DNA
 <213> Arabidopsis thaliana

```

<400> 15
atggcggaag tatcagcaaa atcgggtgacg gttgaggaaa tggcggaaga ggacgacgct      60

gcgattgagg agcgggtggag tctttacgaa gcttacaacg agttacacgc tttggcgag      120

gaattggaga cgccgttcga agcaccggcg gttcttgtgg tgggacagca gaccgacggt      180

aaaagtgcgc ttgtggaagc tcttatgggg tttcaattta accatgtcgg cggcggaacc      240

aagactcgtc ggccgattac tctccatatg aagtacgata ctacagtgtca attcccgtct      300

tgtcatctcg gatctgatga tgatccttcc gtttctcttc ccaaactctct ctacaaaatt      360

caggcatata ttgaggctga gaacatgagg ctggagcaag agccatgtag cccattctct      420

gcaaaggaga ttattgtgaa agtccagtat aagtattgtc caaaccttac catcattgat      480

acacctggac ttattgctcc tgcaccagga ctgaaaaacc gagctcttca ggttcaagca      540

cgggctgtgg aagctctagt ccgagcaaa atgcaacaca aagagttcat cattttatgc      600

ctcgaagata gcagtgactg gagcattgca accactcgaa ggatagtgat gcaagttgat      660

cctgagcttt ctaggacaat tgttgtttct acaaagcttg aactaaaat ccctcaattc      720

tcattgttcat ctgacgtgga agtctttctc tcacctcctg caagcgcaact tgacagctcc      780

ttattgggag attctccttt ttccacgtct gtgccttctg gaagagttgg ctatggacag      840

gattcagtgat ataagtctaa tgacgagttc aaacaggctg tgtcacttag agaaatggaa      900

gacattgcat ctttagagaa gaagttgggc cgtttactga caaacagga aaagagtagg      960

attggcatca gtaaaactgag gttgtttctg gaagaactac tctggaaaag gtacaaagag     1020

agtgttccat tgatcattcc actgttagga aaggagtacc gcagtacagt cagaaagctg     1080

gataccttat cgctgttatt gaagggaaca gttgtggccc ctccagataa atttggtgag     1140

aactgcaag atgaaaggac acaaggagga gcatttggtg gtactgatgg tctccagttt     1200

tcacataagc taataccgaa tgcagggatg cgtctctatg ggggtgcaca atatcaccgt     1260

gccatggctg agtttcgttt tctagttggg gctatcaa atgtccccaat aacgaggagg     1320

gaaattgtaa atgcatgtgg agttgaggat attcatgatg gaacaaacta ttccagaaca     1380

gcttgtgtta tagcagttgc gaaggctcgt gagacgtttg aacctttcct tcatcagaaa     1440

gttttttcca gttctcattt tcgtttgttt tgcgttgata tagttagggg cgaggcttct     1500

acacattctc aagagattgc ttccaatttc tgtatatctt cttcaggtag gtactgtttt     1560

```

```

ctttggtttg acggtgaata ttttaagtggg catgaggtgt ttctcaagcg ggttgcttca 1620
gcattcaaca gttttgtgga gtccacagaa aaatcatgtc gtgacaaatg tatggaggat 1680
ttagcaagta caactcgcta tggtacatgg tctcttcaca acaagaaccg agctgggtcta 1740
cgtcaattct tggactcatt tggtggaaca gagcataata cgacatcagg taatgccata 1800
ggatttagtc ttccccaaga tgcattaggt ggcacaacag acaccaagtc aagatcagat 1860
gtaaagctaa gccatctcgc ctcaaacatc gattcagggt ccagtattca gacaacagaa 1920
atgcggttgg ctgatcttct agatagcaca ctttgaacc gcaagcttgc tccttcctct 1980
gagagaattg tgtacgcatt ggtccaacag atattccagg gcatacgaga gtactttctc 2040
gcctctgctg agttaagtt caactgtttt cttctaagtc ccacgttga taagttacct 2100
gctcttctcc gggaagagtt ggaaaacgca tttgaagacg acctcgatag tatcttcgac 2160
atcacgaatc tccggcaatc acttgatcaa aagaaacgga gcacagagat cgagctcaga 2220
aggataaaga ggataaaaga gaaattcaga gtgatgaatg agaagctaaa ctctcatgaa 2280
tttgctcaaa atctaaaggc tccttcggtg cagcattga 2319

```

```

<210> 16
<211> 772
<212> PRT
<213> Arabidopsis thaliana

```

```

<400> 16

```

```

Met Ala Glu Val Ser Ala Lys Ser Val Thr Val Glu Glu Met Ala Glu
1          5          10          15

```

```

Glu Asp Asp Ala Ala Ile Glu Glu Arg Trp Ser Leu Tyr Glu Ala Tyr
20          25          30

```

```

Asn Glu Leu His Ala Leu Ala Gln Glu Leu Glu Thr Pro Phe Glu Ala
35          40          45

```

```

Pro Ala Val Leu Val Val Gly Gln Gln Thr Asp Gly Lys Ser Ala Leu
50          55          60

```

```

Val Glu Ala Leu Met Gly Phe Gln Phe Asn His Val Gly Gly Gly Thr
65          70          75          80

```

```

Lys Thr Arg Arg Pro Ile Thr Leu His Met Lys Tyr Asp Pro Gln Cys
85          90          95

```

Gln Phe Pro Leu Cys His Leu Gly Ser Asp Asp Asp Pro Ser Val Ser
 100 105 110
 Leu Pro Lys Ser Leu Ser Gln Ile Gln Ala Tyr Ile Glu Ala Glu Asn
 115 120 125
 Met Arg Leu Glu Gln Glu Pro Cys Ser Pro Phe Ser Ala Lys Glu Ile
 130 135 140
 Ile Val Lys Val Gln Tyr Lys Tyr Cys Pro Asn Leu Thr Ile Ile Asp
 145 150 155 160
 Thr Pro Gly Leu Ile Ala Pro Ala Pro Gly Leu Lys Asn Arg Ala Leu
 165 170 175
 Gln Val Gln Ala Arg Ala Val Glu Ala Leu Val Arg Ala Lys Met Gln
 180 185 190
 His Lys Glu Phe Ile Ile Leu Cys Leu Glu Asp Ser Ser Asp Trp Ser
 195 200 205
 Ile Ala Thr Thr Arg Arg Ile Val Met Gln Val Asp Pro Glu Leu Ser
 210 215 220
 Arg Thr Ile Val Val Ser Thr Lys Leu Asp Thr Lys Ile Pro Gln Phe
 225 230 235 240
 Ser Cys Ser Ser Asp Val Glu Val Phe Leu Ser Pro Pro Ala Ser Ala
 245 250 255
 Leu Asp Ser Ser Leu Leu Gly Asp Ser Pro Phe Phe Thr Ser Val Pro
 260 265 270
 Ser Gly Arg Val Gly Tyr Gly Gln Asp Ser Val Tyr Lys Ser Asn Asp
 275 280 285
 Glu Phe Lys Gln Ala Val Ser Leu Arg Glu Met Glu Asp Ile Ala Ser
 290 295 300
 Leu Glu Lys Lys Leu Gly Arg Leu Leu Thr Lys Gln Glu Lys Ser Arg
 305 310 315 320
 Ile Gly Ile Ser Lys Leu Arg Leu Phe Leu Glu Glu Leu Leu Trp Lys
 325 330 335

Arg Tyr Lys Glu Ser Val Pro Leu Ile Ile Pro Leu Leu Gly Lys Glu
 340 345 350

Tyr Arg Ser Thr Val Arg Lys Leu Asp Thr Leu Ser Leu Leu Lys
 355 360 365

Gly Thr Val Val Ala Pro Pro Asp Lys Phe Gly Glu Thr Leu Gln Asp
 370 375 380

Glu Arg Thr Gln Gly Gly Ala Phe Val Gly Thr Asp Gly Leu Gln Phe
 385 390 395 400

Ser His Lys Leu Ile Pro Asn Ala Gly Met Arg Leu Tyr Gly Gly Ala
 405 410 415

Gln Tyr His Arg Ala Met Ala Glu Phe Arg Phe Leu Val Gly Ala Ile
 420 425 430

Lys Cys Pro Pro Ile Thr Arg Glu Glu Ile Val Asn Ala Cys Gly Val
 435 440 445

Glu Asp Ile His Asp Gly Thr Asn Tyr Ser Arg Thr Ala Cys Val Ile
 450 455 460

Ala Val Ala Lys Ala Arg Glu Thr Phe Glu Pro Phe Leu His Gln Lys
 465 470 475 480

Val Phe Ser Ser Ser His Phe Arg Leu Phe Cys Val Asp Ile Val Arg
 485 490 495

Gly Glu Ala Ser Thr His Ser Gln Glu Ile Ala Ser Asn Phe Cys Ile
 500 505 510

Ser Ser Ser Gly Arg Tyr Cys Phe Leu Trp Phe Asp Gly Glu Tyr Leu
 515 520 525

Ser Gly His Glu Val Phe Leu Lys Arg Val Ala Ser Ala Phe Asn Ser
 530 535 540

Phe Val Glu Ser Thr Glu Lys Ser Cys Arg Asp Lys Cys Met Glu Asp
 545 550 555 560

Leu Ala Ser Thr Thr Arg Tyr Val Thr Trp Ser Leu His Asn Lys Asn
 565 570 575

Arg Ala Gly Leu Arg Gln Phe Leu Asp Ser Phe Gly Gly Thr Glu His
 580 585 590

Asn Thr Thr Ser Gly Asn Ala Ile Gly Phe Ser Leu Pro Gln Asp Ala
 595 600 605

Leu Gly Gly Thr Thr Asp Thr Lys Ser Arg Ser Asp Val Lys Leu Ser
 610 615 620

His Leu Ala Ser Asn Ile Asp Ser Gly Ser Ser Ile Gln Thr Thr Glu
 625 630 635 640

Met Arg Leu Ala Asp Leu Leu Asp Ser Thr Leu Trp Asn Arg Lys Leu
 645 650 655

Ala Pro Ser Ser Glu Arg Ile Val Tyr Ala Leu Val Gln Gln Ile Phe
 660 665 670

Gln Gly Ile Arg Glu Tyr Phe Leu Ala Ser Ala Glu Leu Lys Phe Asn
 675 680 685

Cys Phe Leu Leu Met Pro Ile Val Asp Lys Leu Pro Ala Leu Leu Arg
 690 695 700

Glu Glu Leu Glu Asn Ala Phe Glu Asp Asp Leu Asp Ser Ile Phe Asp
 705 710 715 720

Ile Thr Asn Leu Arg Gln Ser Leu Asp Gln Lys Lys Arg Ser Thr Glu
 725 730 735

Ile Glu Leu Arg Arg Ile Lys Arg Ile Lys Glu Lys Phe Arg Val Met
 740 745 750

Asn Glu Lys Leu Asn Ser His Glu Phe Ala Gln Asn Leu Lys Ala Pro
 755 760 765

Ser Val Gln His
 770

<210> 17
 <211> 841
 <212> PRT
 <213> Arabidopsis thaliana

<400> 17

Met Gln Glu Leu Tyr Thr Asn Arg Thr Val Leu Asn Arg Pro Arg Phe
 1 5 10 15

Ala Val Asn Val Arg Pro Thr Arg Leu Lys Arg Asn Gln Gln Ser Gln
 20 25 30

Ser Lys Met Gln Ser His Ser Lys Asp Pro Ile Asn Ala Glu Ser Arg
 35 40 45

Ser Arg Phe Glu Ala Tyr Asn Arg Leu Gln Ala Ala Val Ala Phe
 50 55 60

Gly Glu Lys Leu Pro Ile Pro Glu Ile Val Ala Ile Gly Gly Gln Ser
 65 70 75 80

Asp Gly Lys Ser Ser Leu Leu Glu Ala Leu Leu Gly Phe Arg Phe Asn
 85 90 95

Val Arg Glu Val Glu Met Gly Thr Arg Arg Pro Leu Ile Leu Gln Met
 100 105 110

Val His Asp Leu Ser Ala Leu Glu Pro Arg Cys Arg Phe Gln Ile Ser
 115 120 125

Arg Ile Phe Phe Val Glu Leu Ala Ile Leu Ile Thr Asp Leu Asp Glu
 130 135 140

Asp Ser Glu Glu Tyr Gly Ser Pro Ile Val Ser Ala Thr Ala Val Ala
 145 150 155 160

Asp Val Ile Arg Ser Arg Thr Glu Ala Leu Leu Lys Lys Thr Lys Thr
 165 170 175

Ala Val Ser Pro Lys Pro Ile Val Met Arg Ala Glu Tyr Ala His Cys
 180 185 190

Pro Asn Leu Thr Ile Ile Asp Thr Pro Gly Phe Val Leu Lys Ala Lys
 195 200 205

Lys Gly Glu Pro Glu Thr Thr Pro Asp Glu Ile Leu Ser Met Val Lys
 210 215 220
 Ser Leu Ala Ser Pro Pro His Arg Ile Leu Leu Phe Leu Gln Gln Ser
 225 230 235 240
 Ser Val Glu Trp Cys Ser Ser Leu Trp Leu Asp Ala Val Arg Glu Ile
 245 250 255
 Asp Ser Ser Phe Arg Arg Thr Ile Val Val Val Ser Lys Phe Asp Asn
 260 265 270
 Arg Leu Lys Glu Phe Ser Asp Arg Gly Glu Val Asp Arg Tyr Leu Ser
 275 280 285
 Ala Ser Gly Tyr Leu Gly Glu Asn Thr Arg Pro Tyr Phe Val Ala Leu
 290 295 300
 Pro Lys Asp Arg Ser Thr Ile Ser Asn Asp Glu Phe Arg Arg Gln Ile
 305 310 315 320
 Ser Gln Val Asp Thr Glu Val Ile Arg His Leu Arg Glu Gly Val Lys
 325 330 335
 Gly Gly Phe Asp Glu Glu Lys Phe Arg Ser Cys Ile Gly Phe Gly Ser
 340 345 350
 Leu Arg Asp Phe Leu Glu Ser Glu Leu Gln Lys Arg Tyr Lys Glu Ala
 355 360 365
 Ala Pro Ala Thr Leu Ala Leu Leu Glu Glu Arg Cys Ser Glu Val Thr
 370 375 380
 Asp Asp Met Leu Arg Met Asp Met Lys Ile Gln Ala Thr Ser Asp Val
 385 390 395 400
 Ala His Leu Arg Lys Ala Ala Met Leu Tyr Thr Ala Ser Ile Ser Asn
 405 410 415
 His Val Gly Ala Leu Ile Asp Gly Ala Ala Asn Pro Ala Pro Glu Gln
 420 425 430

Trp Gly Lys Thr Thr Glu Glu Glu Arg Gly Glu Ser Gly Ile Gly Ser
 435 440 445
 Trp Pro Gly Val Ser Val Asp Ile Lys Pro Pro Asn Ala Val Leu Lys
 450 455 460
 Leu Tyr Gly Gly Ala Ala Phe Glu Arg Val Ile His Glu Phe Arg Cys
 465 470 475 480
 Ala Ala Tyr Ser Ile Glu Cys Pro Pro Val Ser Arg Glu Lys Val Ala
 485 490 495
 Asn Ile Leu Leu Ala His Ala Gly Arg Gly Gly Gly Arg Gly Val Thr
 500 505 510
 Glu Ala Ser Ala Glu Ile Ala Arg Thr Ala Ala Arg Ser Trp Leu Ala
 515 520 525
 Pro Leu Leu Asp Thr Ala Cys Asp Arg Leu Ala Phe Val Leu Gly Ser
 530 535 540
 Leu Phe Glu Ile Ala Leu Glu Arg Asn Leu Asn Gln Asn Ser Glu Tyr
 545 550 555 560
 Glu Lys Lys Thr Glu Asn Met Asp Gly Tyr Val Gly Phe His Ala Ala
 565 570 575
 Val Arg Asn Cys Tyr Ser Arg Phe Val Lys Asn Leu Ala Lys Gln Cys
 580 585 590
 Lys Gln Leu Val Arg His His Leu Asp Ser Val Thr Ser Pro Tyr Ser
 595 600 605
 Met Ala Cys Tyr Glu Asn Asn Tyr His Gln Gly Gly Ala Phe Gly Ala
 610 615 620
 Tyr Asn Lys Phe Asn Gln Ala Ser Pro Asn Ser Phe Cys Phe Glu Leu
 625 630 635 640
 Ser Asp Thr Ser Arg Asp Glu Pro Met Lys Asp Gln Glu Asn Ile Pro
 645 650 655
 Pro Glu Lys Asn Asn Gly Gln Glu Thr Thr Pro Gly Lys Gly Gly Glu
 660 665 670

Ser His Ile Thr Val Pro Glu Thr Pro Ser Pro Asp Gln Pro Cys Glu
675 680 685

Ile Val Tyr Gly Leu Val Lys Lys Glu Ile Gly Asn Gly Pro Asp Gly
690 695 700

Val Gly Ala Arg Lys Arg Met Ala Arg Met Val Gly Asn Arg Asn Ile
705 710 715 720

Glu Pro Phe Arg Val Gln Asn Gly Gly Leu Met Phe Ala Asn Ala Asp
725 730 735

Asn Gly Met Lys Ser Ser Ser Ala Tyr Ser Glu Ile Cys Ser Ser Ala
740 745 750

Ala Gln His Phe Ala Arg Ile Arg Glu Val Leu Val Glu Arg Ser Val
755 760 765

Thr Ser Thr Leu Asn Ser Gly Phe Leu Thr Pro Cys Arg Asp Arg Leu
770 775 780

Val Val Ala Leu Gly Leu Asp Leu Phe Ala Val Asn Asp Asp Lys Phe
785 790 795 800

Met Asp Met Phe Val Ala Pro Gly Ala Ile Val Val Leu Gln Asn Glu
805 810 815

Arg Gln Gln Leu Gln Lys Arg Gln Lys Ile Leu Gln Ser Cys Leu Thr
820 825 830

Glu Phe Lys Thr Val Ala Arg Ser Leu
835 840

<210> 18
<211> 817
<212> PRT
<213> Arabidopsis thaliana

<400> 18

Met Ala Asn Ser Asn Thr Tyr Leu Thr Thr Pro Thr Lys Thr Pro Ser
1 5 10 15

Ser Arg Arg Asn Gln Gln Ser Gln Ser Lys Met Gln Ser His Ser Lys
20 25 30

Asp	Pro	Ile	Asn	Ala	Glu	Ser	Arg	Ser	Arg	Phe	Glu	Ala	Tyr	Asn	Arg
		35						40				45			
Leu	Gln	Ala	Ala	Ala	Val	Ala	Phe	Gly	Glu	Lys	Leu	Pro	Ile	Pro	Glu
	50					55					60				
Ile	Val	Ala	Ile	Gly	Gly	Gln	Ser	Asp	Gly	Lys	Ser	Ser	Leu	Leu	Glu
65				70						75					80
Ala	Leu	Leu	Gly	Phe	Arg	Phe	Asn	Val	Arg	Glu	Val	Glu	Met	Gly	Thr
				85					90					95	
Arg	Arg	Pro	Leu	Ile	Leu	Gln	Met	Val	His	Asp	Leu	Ser	Ala	Leu	Glu
			100					105					110		
Pro	Arg	Cys	Arg	Phe	Gln	Asp	Glu	Asp	Ser	Glu	Glu	Tyr	Gly	Ser	Pro
		115					120					125			
Ile	Val	Ser	Ala	Thr	Ala	Val	Ala	Asp	Val	Ile	Arg	Ser	Arg	Thr	Glu
	130					135					140				
Ala	Leu	Leu	Lys	Lys	Thr	Lys	Thr	Ala	Val	Ser	Pro	Lys	Pro	Ile	Val
145					150					155					160
Met	Arg	Ala	Glu	Tyr	Ala	His	Cys	Pro	Asn	Leu	Thr	Ile	Ile	Asp	Thr
				165					170					175	
Pro	Gly	Phe	Val	Leu	Lys	Ala	Lys	Lys	Gly	Glu	Pro	Glu	Thr	Thr	Pro
			180					185					190		
Asp	Glu	Ile	Leu	Ser	Met	Val	Lys	Ser	Leu	Ala	Ser	Pro	Pro	His	Arg
		195					200					205			
Ile	Leu	Leu	Phe	Leu	Gln	Gln	Ser	Ser	Val	Glu	Trp	Cys	Ser	Ser	Leu
	210					215					220				
Trp	Leu	Asp	Ala	Val	Arg	Glu	Ile	Asp	Ser	Ser	Phe	Arg	Arg	Thr	Ile
225					230					235					240
Val	Val	Val	Ser	Lys	Phe	Asp	Asn	Arg	Leu	Lys	Glu	Phe	Ser	Asp	Arg
				245					250					255	

Gly	Glu	Val	Asp	Arg	Tyr	Leu	Ser	Ala	Ser	Gly	Tyr	Leu	Gly	Glu	Asn	260	265	270	
Thr	Arg	Pro	Tyr	Phe	Val	Ala	Leu	Pro	Lys	Asp	Arg	Ser	Thr	Ile	Ser	275	280	285	
Asn	Asp	Glu	Phe	Arg	Arg	Gln	Ile	Ser	Gln	Val	Asp	Thr	Glu	Val	Ile	290	295	300	
Arg	His	Leu	Arg	Glu	Gly	Val	Lys	Gly	Gly	Phe	Asp	Glu	Glu	Lys	Phe	305	310	315	320
Arg	Ser	Cys	Ile	Gly	Phe	Gly	Ser	Leu	Arg	Asp	Phe	Leu	Glu	Ser	Glu	325	330	335	
Leu	Gln	Lys	Arg	Tyr	Lys	Glu	Ala	Ala	Pro	Ala	Thr	Leu	Ala	Leu	Leu	340	345	350	
Glu	Glu	Arg	Cys	Ser	Glu	Val	Thr	Asp	Asp	Met	Leu	Arg	Met	Asp	Met	355	360	365	
Lys	Ile	Gln	Ala	Thr	Ser	Asp	Val	Ala	His	Leu	Arg	Lys	Ala	Ala	Met	370	375	380	
Leu	Tyr	Thr	Ala	Ser	Ile	Ser	Asn	His	Val	Gly	Ala	Leu	Ile	Asp	Gly	385	390	395	400
Ala	Ala	Asn	Pro	Ala	Pro	Glu	Gln	Trp	Gly	Lys	Thr	Thr	Glu	Glu	Glu	405	410	415	
Arg	Gly	Glu	Ser	Gly	Ile	Gly	Ser	Trp	Pro	Gly	Val	Ser	Val	Asp	Ile	420	425	430	
Lys	Pro	Pro	Asn	Ala	Val	Leu	Lys	Leu	Tyr	Gly	Gly	Ala	Ala	Phe	Glu	435	440	445	
Arg	Val	Ile	His	Glu	Phe	Arg	Cys	Ala	Ala	Tyr	Ser	Ile	Glu	Cys	Pro	450	455	460	
Pro	Val	Ser	Arg	Glu	Lys	Val	Ala	Asn	Ile	Leu	Leu	Ala	His	Ala	Gly	465	470	475	480
Arg	Gly	Gly	Gly	Arg	Gly	Val	Thr	Glu	Ala	Ser	Ala	Glu	Ile	Ala	Arg	485	490	495	

Thr	Ala	Ala	Arg	Ser	Trp	Leu	Ala	Pro	Leu	Leu	Asp	Thr	Ala	Cys	Asp			
			500					505					510					
Arg	Leu	Ala	Phe	Val	Leu	Gly	Ser	Leu	Phe	Glu	Ile	Ala	Leu	Glu	Arg			
		515					520					525						
Asn	Leu	Asn	Gln	Asn	Ser	Glu	Tyr	Glu	Lys	Lys	Thr	Glu	Asn	Met	Asp			
	530					535					540							
Gly	Tyr	Val	Gly	Phe	His	Ala	Ala	Val	Arg	Asn	Cys	Tyr	Ser	Arg	Phe			
545					550					555					560			
Val	Lys	Asn	Leu	Ala	Lys	Gln	Cys	Lys	Gln	Leu	Val	Arg	His	His	Leu			
				565					570					575				
Asp	Ser	Val	Thr	Ser	Pro	Tyr	Ser	Met	Ala	Cys	Tyr	Glu	Asn	Asn	Tyr			
			580					585						590				
His	Gln	Gly	Gly	Ala	Phe	Gly	Ala	Tyr	Asn	Lys	Phe	Asn	Gln	Ala	Ser			
		595					600						605					
Pro	Asn	Ser	Phe	Cys	Phe	Glu	Leu	Ser	Asp	Thr	Ser	Arg	Asp	Glu	Pro			
	610					615						620						
Met	Lys	Asp	Gln	Glu	Asn	Ile	Pro	Pro	Glu	Lys	Asn	Asn	Gly	Gln	Glu			
625					630					635					640			
Thr	Thr	Pro	Gly	Lys	Gly	Gly	Glu	Ser	His	Ile	Thr	Val	Pro	Glu	Thr			
				645					650					655				
Pro	Ser	Pro	Asp	Gln	Pro	Cys	Glu	Ile	Val	Tyr	Gly	Leu	Val	Lys	Lys			
			660					665					670					
Glu	Ile	Gly	Asn	Gly	Pro	Asp	Gly	Val	Gly	Ala	Arg	Lys	Arg	Met	Ala			
		675					680					685						
Arg	Met	Val	Gly	Asn	Arg	Asn	Ile	Glu	Pro	Phe	Arg	Val	Gln	Asn	Gly			
	690					695					700							
Gly	Leu	Met	Phe	Ala	Asn	Ala	Asp	Asn	Gly	Met	Lys	Ser	Ser	Ser	Ala			
705					710					715					720			

Tyr Ser Glu Ile Cys Ser Ser Ala Ala Gln His Phe Ala Arg Ile Arg
725 730 735

Glu Val Leu Val Glu Arg Ser Val Thr Ser Thr Leu Asn Ser Gly Phe
740 745 750

Leu Thr Pro Cys Arg Asp Arg Leu Val Val Ala Leu Gly Leu Asp Leu
755 760 765

Phe Ala Val Asn Asp Asp Lys Phe Met Asp Met Phe Val Ala Pro Gly
770 775 780

Ala Ile Val Val Leu Gln Asn Glu Arg Gln Gln Leu Gln Lys Arg Gln
785 790 795 800

Lys Ile Leu Gln Ser Cys Leu Thr Glu Phe Lys Thr Val Ala Arg Ser
805 810 815

Leu

<210> 19
<211> 4283
<212> DNA
<213> Arabidopsis thaliana

<400> 19
ttcatgttct tagaagttct aaattttgat catctcttat ttgaaagctc aactaaaata 60
gctatgatat cattccctga tgctacgtac taggttttta aattcataca cacacaaatc 120
tataattaaa acttggttaa ttcatacaca caaaggacaa atcttcttcg tattaaaaaa 180
gatggaggct ctggaacatc tagtggtgcc gtatcactta cttgactggt tcaagccggt 240
tgtctttggt tggaagaagt aaatttaatt gtgggagagg gatttcacga atttaaactc 300
gtttttctcc cttttcgtgg tatactttgg accttttgga tatgaacaca tatgtgaaaa 360
cgttaattca tgtgtttgaa aagtaattaa tcgcgccgtc cgtcttatag ctttgggatg 420
ggccaatagg atatttaaga gataagaaaa ctaatcagaa acacagacga aggtatctca 480
ctctctctct ttctctctcc atgagaactc taatctctca ccggcaatgt gtgacgtcac 540
cgtttcttat ctccgccgca tctccaccgt ttctggccg gtgctttaag ttatcctcct 600
ttactcctcc acgtcatagg cgtttttctt ctctctcgat cagaaacatt tcgcatgaat 660
ccgccgatca gacttcttct tctaggccgc gaactcttta tcttggtggt tacaagcgctc 720

ccgaactcgc	cgttccccggt	ttactttctcc	ggctagacgc	cgacgagggtt	atgagcggga	780
atcgtgaaga	gactcttgat	ttggtcgacc	gtgcttttagc	taaatcggtt	caaatcgtcg	840
tgattgatgg	cggagccacc	gctggtaagc	tctacgaggc	ggcttggttg	ctgaaatcac	900
ttgtcaaagg	ccgtgcttac	ctcttgatcg	ctgaacgtgt	tgatatcgcc	tccgccgttg	960
gtgctagtgg	tgttgctctc	tccgacgaag	gtaacaactg	atttcattca	gttttagcat	1020
ttaattttctc	atagagtgag	ttttgtctct	caatgctatg	tacaggctctt	ccggcgattg	1080
tggcgagaaa	cacattgatg	ggatccaacc	ccgactcggt	acttcttcca	ctggtagctc	1140
ggattgtgaa	ggatgttgat	tctgctctaa	ttgcctcaag	ctccgagggg	gctgatttcc	1200
ttatacttgg	atctggtgaa	gaagatacgc	aagtggcgga	ttctttgttg	aagagcgtga	1260
aaataccgat	atatgtgact	tgcagaggca	atgaagaagc	taaagaagaa	ttgcagttac	1320
tgaaatcagg	tgtttctggt	tttgttattt	cgttgaaaga	tttgcgttct	tctagggatg	1380
tagctcttcg	ccagagtctt	gatggagctt	atggtgtaaa	taatcatgag	acacaaaata	1440
tgaatgaact	gccggagaaa	aagaattctg	ctggcttcat	aaaattagag	gacaaacaga	1500
aactaatagt	agaaatggag	aaatctgtgt	tgagagagac	gattgaaatc	atccacaagg	1560
cggctccact	ggtgattttt	atttcaaaca	tttggtagtt	gaagtcaatt	ttttgaaatg	1620
gttctaagta	ggtttttgtg	tggttataat	atggtttcat	ttacttcttc	gactattttt	1680
cattaacaga	tggaggaagt	ctcccttcta	attgatgctg	tttctcggat	cgatgagccg	1740
tttctgatgg	ttatagtgg	aattctgcac	tcaactccgt	caaattgtga	ttccaggaat	1800
ttgcattggt	attagctcta	tattcattcc	agaaacattt	tagttacaca	cttttgccag	1860
cactagatag	cttgagatac	aatgggcatg	cttctagtca	cttgtccttt	agtgcctctc	1920
aatatcttct	ttcgtcgct	atgactatga	tgtttcgctt	cttcttttgt	tctgtctatg	1980
cttctcttct	taatttgctt	atggatctgg	ttgtaaggga	actgcatatt	tcttaactgt	2040
accatctgct	tgtgtacata	gttttttcgc	tttcttgtga	cttgtgagta	tgccgttctt	2100
ggaagatggt	ttaagtggga	caagttgcct	ttatgattca	aaatagtttt	tgtatggata	2160
attaattgga	atccacaatt	tgctgggtact	agggggaatt	taactctgga	aaatcaacgg	2220
ttatcaatgc	acttcttggg	aagagatacc	tgaaagaagg	ggtagtcccc	actaccaatg	2280
aaatcacgtt	tctgtgctac	tctgacttgg	aatccgaaga	gcaacaacgt	tgccaaacac	2340
atccagatgg	ccaatatgta	tgctatcttc	ctgcaccaat	acttaaggat	gtgagtaatt	2400
caaaattcta	ccatcgagc	cctgaatttt	tactaattat	ttggaggaat	tgatttgggt	2460

tggtctcctt	tcgagcagat	aaatattggt	gacacacctg	ggaccaatgt	gacccctcaa	2520
aggcaacagc	gtcttacaga	agaatttggt	ccacgtgcag	atttgcttgt	ttttgttctt	2580
tctgctgacc	gccctttaac	tgaaagtgag	gtagaagtta	ccgttttact	tggcatgtta	2640
gttggtgttg	tttttgcctc	atatgtatct	gcctaagtag	cttggttagat	ctattttttca	2700
cgaaagtagt	tagttaagtc	atgtatagac	catcaagacc	ttgtgtaggg	aagggaaaagt	2760
tgctactagg	ttgaatgcat	atatcaaggt	tttggttgatt	ataaatttaa	actagactaa	2820
tttattttca	aagtaatgag	tgttatagct	attgctggaa	ccagtatgtc	ctggttggtcc	2880
atattttggg	aaagcttagg	ccaatacatt	tgagaggtga	gttggttattg	gtacagcaaa	2940
actgattttta	cgtccatggc	aaattgtatg	taaatgatca	tctacgaagt	actaacctta	3000
tgaatatttg	gttcttattt	tgaaaatctg	aaaaagtttc	aaaagaagga	ataagcttct	3060
caatgtcatc	atacccatgt	catttctatc	tctacctctg	gagcttcctg	ctgtcttgat	3120
tttactgtag	gctgatttac	atctcattgc	gtttgtcagg	ttgcgtttct	ccggtacaca	3180
cagcagtggg	aaaagaaatt	tgtgtttatt	ctgaataaat	ctgatatcta	tcgtgatgct	3240
cgtgagggtt	atcagaaaca	atatttatgt	cttttccttg	atagtctctg	taattgctgg	3300
atttttcttg	actaaagatt	aattttactg	ctgcagcttg	aggaagctat	ttcatttggt	3360
aaagagaata	cacggaagtt	gcttaataca	gaaaatgtga	tattgtatcc	ggtgtccgca	3420
cggctctgct	ttgaggcgaa	gctttcaaca	gcttcttttg	ttggcagaga	tgatcttgag	3480
atcgcagatc	ctggttctaa	ttggagagtc	cagagcttca	atgaacttga	gaaatttctt	3540
tatagcttct	tggatagctc	aacagctacc	gggatggaga	gaataaggct	taaattggag	3600
acacccatgg	cgattgctga	gcgtctcctt	tcttctgtgg	aagctcttgt	gagacaagat	3660
tgcctagctg	ctaggaaga	cttggttca	gcagacaaga	ttatcagtcg	aactaaagaa	3720
tacgcgctta	agatggaata	tgagagcatt	tcttgagaga	ggcaggctct	ctcgttggta	3780
taaattctat	tagatattat	cttggtgaat	cacgaaggag	gaaattggat	tgttctaact	3840
tggctttttt	gtgttttgta	ctctggcttt	tatcgcagat	tgataatgcc	agattacaag	3900
ttgttgatct	gataggaact	accctgcgac	tatcaagcct	tgatcttgcg	atctcgtagc	3960
tgttcaaagg	ggaaaaatcg	gcctcagtag	cagctacatc	caaagttcaa	ggtgaaatac	4020
tcgctccagc	actcaciaat	gcgaaagtaa	gtgtgatgct	ttattctttg	agtattggcc	4080
taactgggga	catgttggtc	atatatatga	ggtctgagat	atagtcacta	ttcatgcaga	4140
aagtaaatat	tgtctaacaa	tgtcttggtg	tgacctgatt	gactttacat	ttcactgttt	4200

gcaggaattg cttggaaaat atgctgaatg gctacaatca aatactgccc gtgaagggag	4260
tctgtctctg aaatcattcg aaa	4283

<210> 20
 <211> 1929
 <212> DNA
 <213> Arabidopsis thaliana

<400> 20	
atgagaactc taatctctca ccggcaatgt gtgacgtcac cgtttcttat ctccgccgca	60
tctccaccgt ttcttgcccg gtgctttaag ttatcctcct ttactcctcc acgtcatagg	120
cgtttttctt ctctctcgat cagaaacatt tcgcatgaat ccgccgatca gacttcttct	180
tctaggccgc gaactcttta tcttggtggt tacaagcgtc ccgaactcgc cgttcccggt	240
ttacttctcc ggctagacgc cgacgaggtt atgagcggga atcgtgaaga gactcttgat	300
ttggtcgacc gtgctttagc taaatcgggt caaatcgctg tgattgatgg cggagccacc	360
gctggtaagc tctacgaggc ggcttggttg ctgaaatcac ttgtcaaagg ccgtgcttac	420
ctcttgatcg ctgaacgtgt tgatatcgcc tccgccgttg gtgctagtgg tgttgctctc	480
tccgacgaag gtcttccggc gattgtggcg agaaacacat tgatgggatc caaccccgac	540
tcggtacttc ttccactggt agctcggatt gtgaaggatg ttgattctgc tctaattgcc	600
tcaagctccg agggtgctga ttctcttata cttggatctg gtgaagaaga tacgcaagtg	660
gcggattctt tgttgaagag cgtgaaaata ccgatatatg tgacttgcag aggcaatgaa	720
gaagctaaag aagaattgca gttactgaaa tcagggtgtt ctgggtttgt tatttcgttg	780
aaagatttgc gttcttctag ggatgtagct cttcgccaga gtcttgatgg agcttatgtt	840
gtaaataatc atgagacaca aaatatgaat gaactgccgg agaaaaagaa ttctgctggc	900
ttcataaaat tagaggacaa acagaaacta atagtagaaa tggagaaatc tgtgttgaga	960
gagacgattg aaatcatcca caaggcggct ccactgatgg aggaagtctc ccttctaatt	1020
gatgctgttt ctccgatcga tgagccgttt ctgatggtta tagtggggga atttaactct	1080
ggaaaatcaa cggttatcaa tgcacttctt gggaagagat acctgaaaga aggggtagtc	1140
cccactacca atgaaatcac gtttctgtgc tactctgact tggaatccga agagcaacaa	1200
cgttgccaaa cacatccaga tggccaatat gtatgctatc ttcttgcacc aatacttaag	1260
gatataaata ttgttgacac acctgggacc aatgtgatcc ttcaaaggca acagcgtctt	1320
acagaagaat ttgttccacg tgcagatttg cttgtttttg ttctttctgc tgaccgcctt	1380
ttaactgaaa gtgaggttgc gtttctccgg tacacacagc agtggaaaaa gaaatttgtg	1440

tttattctga ataaatctga tatctatcgt gatgctcgtg agcttgagga agctatttca 1500
 tttgttaaag agaatacacg gaagttgctt aatacagaaa atgtgatatt gtatccggtg 1560
 tccgcacggt ctgctcttga ggcgaagctt tcaacagctt ctttggttgg cagagatgat 1620
 cttgagatcg cagatcctgg ttctaattgg agagtccaga gcttcaatga acttgagaaa 1680
 tttctttata gcttcttggga tagctcaaca gctaccggga tggagagaat aaggcttaaa 1740
 ttggagacac ccatggcgat tgctgagcgt ctcctttctt ctgtggaagc tcttgtgaga 1800
 caagattgcc tagctgctag ggaagacttg gcttcagcag acaagattat cagtcgaact 1860
 aaagaatacg cgcttaagat ggaatatgag agcatttctt ggagaaggca ggctctctcg 1920
 ttggtataa 1929

<210> 21
 <211> 642
 <212> PRT
 <213> Arabidopsis thaliana

<400> 21

Met Arg Thr Leu Ile Ser His Arg Gln Cys Val Thr Ser Pro Phe Leu
 1 5 10 15

Ile Ser Ala Ala Ser Pro Pro Phe Pro Gly Arg Cys Phe Lys Leu Ser
 20 25 30

Ser Phe Thr Pro Pro Arg His Arg Arg Phe Ser Ser Leu Ser Ile Arg
 35 40 45

Asn Ile Ser His Glu Ser Ala Asp Gln Thr Ser Ser Ser Arg Pro Arg
 50 55 60

Thr Leu Tyr Pro Gly Gly Tyr Lys Arg Pro Glu Leu Ala Val Pro Gly
 65 70 75 80

Leu Leu Leu Arg Leu Asp Ala Asp Glu Val Met Ser Gly Asn Arg Glu
 85 90 95

Glu Thr Leu Asp Leu Val Asp Arg Ala Leu Ala Lys Ser Val Gln Ile
 100 105 110

Val Val Ile Asp Gly Gly Ala Thr Ala Gly Lys Leu Tyr Glu Ala Ala
 115 120 125

Cys Leu Leu Lys Ser Leu Val Lys Gly Arg Ala Tyr Leu Leu Ile Ala
 130 135 140
 Glu Arg Val Asp Ile Ala Ser Ala Val Gly Ala Ser Gly Val Ala Leu
 145 150 155 160
 Ser Asp Glu Gly Leu Pro Ala Ile Val Ala Arg Asn Thr Leu Met Gly
 165 170 175
 Ser Asn Pro Asp Ser Val Leu Leu Pro Leu Val Ala Arg Ile Val Lys
 180 185 190
 Asp Val Asp Ser Ala Leu Ile Ala Ser Ser Ser Glu Gly Ala Asp Phe
 195 200 205
 Leu Ile Leu Gly Ser Gly Glu Glu Asp Thr Gln Val Ala Asp Ser Leu
 210 215 220
 Leu Lys Ser Val Lys Ile Pro Ile Tyr Val Thr Cys Arg Gly Asn Glu
 225 230 235 240
 Glu Ala Lys Glu Glu Leu Gln Leu Leu Lys Ser Gly Val Ser Gly Phe
 245 250 255
 Val Ile Ser Leu Lys Asp Leu Arg Ser Ser Arg Asp Val Ala Leu Arg
 260 265 270
 Gln Ser Leu Asp Gly Ala Tyr Val Val Asn Asn His Glu Thr Gln Asn
 275 280 285
 Met Asn Glu Leu Pro Glu Lys Lys Asn Ser Ala Gly Phe Ile Lys Leu
 290 295 300
 Glu Asp Lys Gln Lys Leu Ile Val Glu Met Glu Lys Ser Val Leu Arg
 305 310 315 320
 Glu Thr Ile Glu Ile Ile His Lys Ala Ala Pro Leu Met Glu Glu Val
 325 330 335
 Ser Leu Leu Ile Asp Ala Val Ser Arg Ile Asp Glu Pro Phe Leu Met
 340 345 350
 Val Ile Val Gly Glu Phe Asn Ser Gly Lys Ser Thr Val Ile Asn Ala
 355 360 365

Leu Leu Gly Lys Arg Tyr Leu Lys Glu Gly Val Val Pro Thr Thr Asn
 370 375 380

Glu Ile Thr Phe Leu Cys Tyr Ser Asp Leu Glu Ser Glu Glu Gln Gln
 385 390 395 400

Arg Cys Gln Thr His Pro Asp Gly Gln Tyr Val Cys Tyr Leu Pro Ala
 405 410 415

Pro Ile Leu Lys Asp Ile Asn Ile Val Asp Thr Pro Gly Thr Asn Val
 420 425 430

Ile Leu Gln Arg Gln Gln Arg Leu Thr Glu Glu Phe Val Pro Arg Ala
 435 440 445

Asp Leu Leu Val Phe Val Leu Ser Ala Asp Arg Pro Leu Thr Glu Ser
 450 455 460

Glu Val Ala Phe Leu Arg Tyr Thr Gln Gln Trp Lys Lys Lys Phe Val
 465 470 475 480

Phe Ile Leu Asn Lys Ser Asp Ile Tyr Arg Asp Ala Arg Glu Leu Glu
 485 490 495

Glu Ala Ile Ser Phe Val Lys Glu Asn Thr Arg Lys Leu Leu Asn Thr
 500 505 510

Glu Asn Val Ile Leu Tyr Pro Val Ser Ala Arg Ser Ala Leu Glu Ala
 515 520 525

Lys Leu Ser Thr Ala Ser Leu Val Gly Arg Asp Asp Leu Glu Ile Ala
 530 535 540

Asp Pro Gly Ser Asn Trp Arg Val Gln Ser Phe Asn Glu Leu Glu Lys
 545 550 555 560

Phe Leu Tyr Ser Phe Leu Asp Ser Ser Thr Ala Thr Gly Met Glu Arg
 565 570 575

Ile Arg Leu Lys Leu Glu Thr Pro Met Ala Ile Ala Glu Arg Leu Leu
 580 585 590

Ser Ser Val Glu Ala Leu Val Arg Gln Asp Cys Leu Ala Ala Arg Glu
595 600 605

Asp Leu Ala Ser Ala Asp Lys Ile Ile Ser Arg Thr Lys Glu Tyr Ala
610 615 620

Leu Lys Met Glu Tyr Glu Ser Ile Ser Trp Arg Arg Gln Ala Leu Ser
625 630 635 640

Leu Val

<210> 22

<211> 6060

<212> DNA

<213> Arabidopsis thaliana

<400> 22

```
actgtcacia agaactagaa aaggcaagca aaactcaact atgtcaaaaag tgtcacttag      60
attgattctt gaatagcgag acgaagtatc tgggaaaata cggtagtgaa ttaacatctc      120
cgtcagatca taggttcgga ttgaacagat gacacaatta aacaatgatg aagatcaaga      180
cactttaatc gactgaattc tagttagaac ttagactaaa agtatttaat acttgaagct      240
caccacttct cgaatatctt gttccaatcg ttttgatgtg gttccggcac tcaagttctg      300
tattgttttc aagctgactt tatcagtttt ctgaagtaag tcatatgtgt ctatgcccaa      360
ttgcgttttt gaattgacat atgttggcca tttgttttcg aatgatttca gagacagact      420
cccttcacgg gcagtatttg attgtagcca ttcagcatat tttccaagca attcctgcaa      480
acagtgaat gttaaagtcaa tcaggtcaca acaagacatt gttagacaat atttactttc      540
tgcataaata gtgactatat ctcagacctc atatatatga ccaacatgtc cccagttagg      600
ccaataactca aagaataaag catcacactt actttcgcat ttgtgagtgc tggagcgagt      660
atttcacctt gaactttgga tgtagctgct actgaggccg atttttcccc tttgaacacg      720
tacgagatcg caagatcaag gcttgatagt cgcagggtag ttcctatcag atcaacaact      780
tgtaatctgg cattatcaat ctgcgataaa agccagagta caaaacacaa aaaagccaag      840
ttagaacaat ccaatttctt ccttcgtgat tcaacaagat aatatctaata agaatttata      900
ccaacgagag agcctgcctt ctccaagaaa tgctctcata ttccatctta agcgcgtatt      960
ctttagttcg actgataatc ttgtctgctg aagccaagtc ttccctagca gctaggcaat     1020
cttgtctcac aagagcttcc acagaagaaa ggagacgctc agcaatcgcc atgggtgtct     1080
```

ccaattttaag ccttattctc tccatcccgg tagctggtga gctatccaag aagctataaa	1140
gaaattttctc aagttcattg aagctctgga ctctccaatt agaaccagga tctgcatct	1200
caagatcatc tctgccaacc aaagaagctg ttgaaagctt cgcctcaaga gcagaccgtg	1260
cggacaccgg atacaatatc acattttctg tattaagcaa cttccgtgta ttctctttaa	1320
caaatgaaat agcttcctca agctgcagca gtaaaattaa tcttttagtca agaaaaatcc	1380
agcaattaca gagactatca aggaaaagac ataaatattg tttctgataa acctcacgag	1440
catcacgata gatatcagat ttattcagaa taaacacaaa tttctttttc cactgctgtg	1500
tgtaccggag aaacgcaacc tgacaaacgc aatgagatgt aaatcagcct acagtaaaat	1560
caagacagca ggaagctcca gaggtagaga tagaaatgac atgggtatga tgacattgag	1620
aagcttattc cttcttttga aactttttca gattttcaaa ataagaacca aatattcata	1680
aggttagtac ttcgtagatg atcatttaca tacaatttgc catggacgta aaatcagttt	1740
tgctgtacca ataacaactc acctctcaaa tgtattggcc taagctttac caaaatatgg	1800
accaacagga catactggtt ccagcaatag ctataacact cattactttg aaaataaatt	1860
agtctagttt aaatttataa tcaacaaaac cttgatatat gcattcaacc tagtgacaac	1920
tttcccttcc ctacacaagg tcttgatggt ctatacatga cttaactaac tactttcgtg	1980
aaaaatagat ctaacaagct acttaggcag atacatattg agcaaaaaaca acaacaacta	2040
acatgccaaag taaaacggta acttctacct cactttcagt taaagggcgg tcagcagaaa	2100
gaacaaaaac aagcaaattc gcacgtggaa caaattcttc tgtaagacgc tgttgccctt	2160
gaaggatcac attggtccca ggtgtgtcaa caatatttat ctgctcgaaa ggagaacaac	2220
ccaaatcaat tcctccaaat aattagtaaa aattcaggac tgcgatggta gaattttgaa	2280
ttactcacat ccttaagtat tgggtgcagga agatagcata catattggcc atctggatgt	2340
gtttggcaac gttgttgctc ttcggtattc aagtcagagt agcacagaaa cgtgatttca	2400
ttggtagtgg ggactacccc ttctttcagg tatctcttcc caagaagtgc attgataacc	2460
gttgattttc cagagttaaa ttccccctag taccagcaaa ttgtggattc caattaatta	2520
tccatacaaa aactattttg aatcataaag gcaacttgtc ccacttaaaa catcttccaa	2580
gaacggcata ctcacaagtc acaagaaagc gaaaaaacta tgtacacaag cagatgggtac	2640
agttaagaaa tatgcagttc ccttacaacc agatccataa gcaaattaag aagagaagca	2700
tagacagaac aaaagaagaa gcgaaacatc atagtcatag gcgacgaaag aagatattga	2760
gaagcactaa aggacaagtg actagaagca tgcccattgt atctcaagct atctagtgt	2820

ggcaaaagtg	tgtaactaaa	atgtttctgg	aatgaatata	gagctaatac	caatgcaa	2880
tcttggaatc	acaatttgac	ggagttgagt	gcagaattac	cactataacc	atcagaaacg	2940
gctcatcgat	ccgagaaaca	gcatcaatta	gaagggagac	ttcctccatc	tgttaatgaa	3000
aaatagtcga	agaagtaa	gaaaccatat	tataaccaca	caaaaaccta	cttagaacca	3060
tttcaaaaaa	ttgacttcaa	ctaccaaatg	tttgaaataa	aaatcaccag	tggagccgcc	3120
ttgtggatga	tttcaatcgt	ctctctcaac	acagatttct	ccatttctac	tattagtttc	3180
tgtttgtcct	ctaattttat	gaagccagca	gaattctttt	tctccggcag	ttcattcata	3240
ttttgtgtct	catgattatt	tacaacataa	gctccatcaa	gactctggcg	aagagctaca	3300
tccctagaag	aacgcaa	tttcaacgaa	ataacaaaac	cagaaacacc	tgatttcagt	3360
aactgcaatt	cttcttttagc	ttcttcattg	cctctgcaag	tcacatatat	cggatatttc	3420
acgctcttca	acaaagaatc	cgccacttgc	gtatcttctt	caccagatcc	aagtataagg	3480
aaatcagcac	cctcggagct	tgaggcaatt	agagcagaat	caacatcctt	cacaatccga	3540
gctaccagt	gaagaagtac	cgagtcgggg	ttggatccca	tcaatgtgtt	tctcgccaca	3600
atcgccggaa	gacctgtaca	tagcattgag	agacaaaact	cactctatga	gaaattaaat	3660
gctaaaactg	aatgaaatca	gttgttacct	tcgtcggaga	gagcaacacc	actagcacca	3720
acggcggagg	cgatatcaac	acgttcagcg	atcaagaggt	aagcacggcc	tttgacaagt	3780
gatttcagca	aacaagccgc	ctcgtagagc	ttaccagcgg	tggtcccgcc	atcaatcacg	3840
acgatttgaa	ccgatttagc	taaagcacgg	tcgaccaa	caagagtctc	ttcacgattc	3900
ccgctcataa	cctcgtcggc	gtctagccgg	agaagtaa	cgggaacggc	gagttcggga	3960
cgcttgtaac	caccaggata	aagagttcgc	ggcctagaag	aagaagtctg	atcggcggat	4020
tcatgcgaaa	tgtttctgat	cgagagagaa	gaaaaacgcc	tatgacgtgg	aggagtaaag	4080
gaggataact	taaagcaccg	gccaggaa	ggtggagatg	cggcggagat	aagaaacggt	4140
gacgtcacac	attgccggtg	agagattaga	gttctcatgg	agagagaaag	agagagagt	4200
agataccttc	gtctgtgttt	ctgattagtt	ttcttatctc	ttaaatatcc	tattggccca	4260
tcccaaagct	ataagacgga	cggcgcgatt	aattactttt	caaacacatg	aattaacgtt	4320
ttcacatatg	tgttcatatc	caaaagggtc	aaagtatacc	acgaaaaggg	agaaaaacag	4380
atttaaattc	gtgaaatccc	tctcccacaa	ttaaatttac	ttcttccaaa	caaagacaaa	4440
cggcttgaac	cagtcaagta	agtgatacgg	caccactaga	tgttccagag	cctccatctt	4500
ttttaatacg	aagaagattt	gtcctttgtg	tgtatgaatt	taacaagttt	taattataga	4560

tttgtgtgtg	tatgaattta	aaaacctagt	acgtagcatc	agggaatgat	atcatagcta	4620
ttttagttga	gctttcaa	aagagatgat	caaaatttag	aacttctaag	aacatgaacg	4680
aataaacaac	tattttcttt	tcaaaccaac	taaggtagat	ggtcactgaa	agtatataca	4740
tcagataaaa	gttgcttggt	attccagatg	aagttggacc	gagaaaaaaa	aaagttactt	4800
gttattcaat	atgtttggat	ctttgtcttg	cagattgcta	tataggggtg	ataatgggct	4860
tcgttgtaat	gggtatacag	tgtataagaa	tcggccttgt	gcaaccaatc	ctaatatgtg	4920
tgtctcatta	aggtaagtgc	ttaagattag	aagagtaaaa	cacttgactt	atcaactatg	4980
tcaactaagg	gttctatatt	tttattaaat	aaaaaataat	tgaatatttt	ttagaatgat	5040
ttaataaatt	taatgctatt	gtttgattta	aatgtataat	tcaccgcgag	aagaaatttt	5100
ataactcaaa	ttttaagtt	ttaagttgta	tttgtttatt	ttgttaa	tttaatatg	5160
tataattgta	ttttgattgt	tgtttctcgg	atttcacccg	tagtacatca	tcccatatta	5220
atatcgaatc	aaacccgtca	attctaaaat	ttcacccgtg	gtagtattta	attgtataat	5280
tatattttta	ttgtcattct	aagatttcac	tcctaattct	atcgcaaatt	attatcaacc	5340
caaaccagtc	aattctaaaa	tatcacccgt	agtacaccat	cccatattaa	tatcgaatca	5400
agcccgta	ttctaggatt	tcacccgtgg	tagtatttaa	ttgtataatt	atattttaat	5460
tgtcattcta	ggatttcact	cctaattcta	tcgcaaatta	ttatcaaccc	aaaccagtc	5520
attctaaaat	atcacccgta	gtacaccatc	ccatattaat	atcgattcaa	actcgtcaat	5580
tctaggattt	cgctcgtgg	agtattta	tgtataatta	tattttta	gtcattttta	5640
ctcctagttc	tatcgcaa	tcttatcaac	ccaaacagtc	aattctaaaa	tttcacccgt	5700
agtataaagt	ttaa	ataatattta	aatttcttat	aaaagaatca	aaatgtgttt	5760
taaaaa	aaagttttta	gttttttttt	tttaatatg	ttaattttgt	ttagtgttta	5820
agattatata	attacattat	gattgtcatt	atatgttttt	ctccatagca	tactatccca	5880
tgttattatc	cactcaaacc	tgtcacacca	tataaccccg	tcccgtgaaa	ttaa	5940
atttgtcatt	ttattataaa	tttcaa	ttataaa	agaaacttca	aaaaagatta	6000
atattgaccc	aaacttcac	attgaatttt	gagtgttata	tctaagattt	ctctcgcaat	6060

<210> 23
 <211> 2469
 <212> DNA
 <213> Arabidopsis thaliana

<400> 23
atggaggctc tggaaacatct agtgcttttg gatgggccaa taggatattt aagagataag 60
aaaactaatc agaaacacag acgaaggat ctcactctct ctctttctct ctccatgaga 120
actctaactc ctcaccggca atgtgtgacg tcaccgtttc ttatctccgc cgcactctcca 180
ccgtttcctg gccgggtgctt taagttatcc tcctttactc ctccacgtca taggcgtttt 240
tcttctctct cgatcagaaa catttcgcat gaatccgccg atcagacttc ttcttctagg 300
ccgcgaactc tttatcctgg tggttacaag cgtcccgaac tcgccgttcc cggtttactt 360
ctccggctag acgccgacga gggttatgagc ggggaatcgtg aagagactct tgatttggtc 420
gaccgtgctt tagctaaatc ggttcaaatc gtcgtgattg atggcggagc caccgctggt 480
aagctctacg aggcggcttg tttgctgaaa tcacttgctc aaggccgtgc ttacctcttg 540
atcgtgaac gtgttgatat cgcctccgcc gttggtgcta gtggtgttg cctctccgac 600
gaaggcttcc cggcgattgt ggcgagaaac acattgatgg gatccaaccc cgactcggta 660
cttcttccac tggtagctcg gattgtgaag gatgttgatt ctgctctaat tgcctcaagc 720
tccgaggggtg ctgatttcct tatacttgga tctggtgaag aagatacgca agtggcggat 780
tctttgttga agagcgtgaa aataccgata tatgtgactt gcagaggcaa tgaagaagct 840
aaagaagaat tgcagttact gaaatcaggt gtttctgggt ttgttatttc gttgaaagat 900
ttgcgttctt ctagggatgt agctcttcgc cagagtcttg atggagctta tgttgtaaat 960
aatcatgaga cacaaaatat gaatgaactg ccggagaaaa agaattctgc tggcttcata 1020
aaattagagg acaaacagaa actaatagta gaaatggaga aatctgtgtt gagagagacg 1080
attgaaatca tccacaaggc ggctccactg atggaggaag tctcccttct aattgatgct 1140
gtttctcgga tcgatgagcc gtttctgatg gttatagtgg gggaatttaa ctctggaaaa 1200
tcaacggtta tcaatgcact tcttggaag agatacctga aagaaggggt agtccccact 1260
accaatgaaa tcacgtttct gtgctactct gacttggaat ccgaagagca acaacgttgc 1320
caaacacatc cagatggcca atatataaat attgttgaca cacctgggac caatgtgatc 1380
cttcaaaggc aacagcgtct tacagaagaa tttgttccac gtgcagattt gcttggtttt 1440
gttctttctg ctgaccgccc tttactgaa agtgaggtag aagttaccgt ttacttggc 1500
atggaagggg aagttgtcac taggttgaat gcatatatca aggttgcgtt tctccgttac 1560
acacagcagt ggaaaaagaa atttgtgttt attctgaata aatctgatat ctatcgtgat 1620
gctcgtgagc ttgaggaagc tatttcattt gttaaagaga atacacggaa gttgcttaat 1680

acagaaaatg tgatattgta tccgggtgtcc gcacgggtctg ctcttgaggc gaagctttca 1740
 acagcttctt tggttggcag agatgatctt gagatcgagc atcctgggttc taattggaga 1800
 gtccagagct tcaatgaact tgagaaattt ctttatagct tcttgatag ctcaacagct 1860
 accgggatgg agagaataag gcttaaattg gagacaccca tggcgattgc tgagcgtctc 1920
 ctttcttctg tggaagctct tgtgagacaa gattgcctag ctgctagga agacttggct 1980
 tcagcagaca agattatcag tcgaactaaa gaatacgcgc ttaagatgga atatgagagc 2040
 atttcttgga gaaggcaggc tctctcgttg attgataatg ccagattaca agttgttgat 2100
 ctgataggaa ctaccctgcg actatcaagc cttgatcttg cgatctcgta cgtgttcaaa 2160
 ggggaaaaat cggcctcagt agcagctaca tccaaagttc aagggtgaaat actcgtcca 2220
 gcactcacia atgcgaaaga attgcttgga aaatatgctg aatggctaca atcaaatact 2280
 gcccgtaag ggagtctgtc tctgaaatca ttcgaaaaca aatggccaac atatgtcaat 2340
 tcaaaaacgc aattgggcat agacacatat gacttacttc agaaaactga taaagtcagc 2400
 ttgaaaacaa tacagaactt gagtgccgga accacatcaa aacgattgga acaagatatt 2460
 cgagaagtg 2469

<210> 24
 <211> 823
 <212> PRT
 <213> Arabidopsis thaliana

<400> 24

Met Glu Ala Leu Glu His Leu Val Leu Trp Asp Gly Pro Ile Gly Tyr
 1 5 10 15

Leu Arg Asp Lys Lys Thr Asn Gln Lys His Arg Arg Arg Tyr Leu Thr
 20 25 30

Leu Ser Leu Ser Leu Ser Met Arg Thr Leu Ile Ser His Arg Gln Cys
 35 40 45

Val Thr Ser Pro Phe Leu Ile Ser Ala Ala Ser Pro Pro Phe Pro Gly
 50 55 60

Arg Cys Phe Lys Leu Ser Ser Phe Thr Pro Pro Arg His Arg Arg Phe
 65 70 75 80

Ser Ser Leu Ser Ile Arg Asn Ile Ser His Glu Ser Ala Asp Gln Thr
 85 90 95

Ser Ser Ser Arg Pro Arg Thr Leu Tyr Pro Gly Gly Tyr Lys Arg Pro
 100 105 110

Glu Leu Ala Val Pro Gly Leu Leu Leu Arg Leu Asp Ala Asp Glu Val
 115 120 125

Met Ser Gly Asn Arg Glu Glu Thr Leu Asp Leu Val Asp Arg Ala Leu
 130 135 140

Ala Lys Ser Val Gln Ile Val Val Ile Asp Gly Gly Ala Thr Ala Gly
 145 150 155 160

Lys Leu Tyr Glu Ala Ala Cys Leu Leu Lys Ser Leu Val Lys Gly Arg
 165 170 175

Ala Tyr Leu Leu Ile Ala Glu Arg Val Asp Ile Ala Ser Ala Val Gly
 180 185 190

Ala Ser Gly Val Ala Leu Ser Asp Glu Gly Leu Pro Ala Ile Val Ala
 195 200 205

Arg Asn Thr Leu Met Gly Ser Asn Pro Asp Ser Val Leu Leu Pro Leu
 210 215 220

Val Ala Arg Ile Val Lys Asp Val Asp Ser Ala Leu Ile Ala Ser Ser
 225 230 235 240

Ser Glu Gly Ala Asp Phe Leu Ile Leu Gly Ser Gly Glu Glu Asp Thr
 245 250 255

Gln Val Ala Asp Ser Leu Leu Lys Ser Val Lys Ile Pro Ile Tyr Val
 260 265 270

Thr Cys Arg Gly Asn Glu Glu Ala Lys Glu Glu Leu Gln Leu Leu Lys
 275 280 285

Ser Gly Val Ser Gly Phe Val Ile Ser Leu Lys Asp Leu Arg Ser Ser
 290 295 300

Arg Asp Val Ala Leu Arg Gln Ser Leu Asp Gly Ala Tyr Val Val Asn
 305 310 315 320

Asn His Glu Thr Gln Asn Met Asn Glu Leu Pro Glu Lys Lys Asn Ser
 325 330 335

Ala Gly Phe Ile Lys Leu Glu Asp Lys Gln Lys Leu Ile Val Glu Met
 340 345 350

Glu Lys Ser Val Leu Arg Glu Thr Ile Glu Ile Ile His Lys Ala Ala
 355 360 365

Pro Leu Met Glu Glu Val Ser Leu Leu Ile Asp Ala Val Ser Arg Ile
 370 375 380

Asp Glu Pro Phe Leu Met Val Ile Val Gly Glu Phe Asn Ser Gly Lys
 385 390 395 400

Ser Thr Val Ile Asn Ala Leu Leu Gly Lys Arg Tyr Leu Lys Glu Gly
 405 410 415

Val Val Pro Thr Thr Asn Glu Ile Thr Phe Leu Cys Tyr Ser Asp Leu
 420 425 430

Glu Ser Glu Glu Gln Gln Arg Cys Gln Thr His Pro Asp Gly Gln Tyr
 435 440 445

Ile Asn Ile Val Asp Thr Pro Gly Thr Asn Val Ile Leu Gln Arg Gln
 450 455 460

Gln Arg Leu Thr Glu Glu Phe Val Pro Arg Ala Asp Leu Leu Val Phe
 465 470 475 480

Val Leu Ser Ala Asp Arg Pro Leu Thr Glu Ser Glu Val Glu Val Thr
 485 490 495

Val Leu Leu Gly Met Glu Gly Lys Val Val Thr Arg Leu Asn Ala Tyr
 500 505 510

Ile Lys Val Ala Phe Leu Arg Tyr Thr Gln Gln Trp Lys Lys Lys Phe
 515 520 525

Val Phe Ile Leu Asn Lys Ser Asp Ile Tyr Arg Asp Ala Arg Glu Leu
 530 535 540

Glu Glu Ala Ile Ser Phe Val Lys Glu Asn Thr Arg Lys Leu Leu Asn
 545 550 555 560

Thr	Glu	Asn	Val	Ile	Leu	Tyr	Pro	Val	Ser	Ala	Arg	Ser	Ala	Leu	Glu	565	570	575
Ala	Lys	Leu	Ser	Thr	Ala	Ser	Leu	Val	Gly	Arg	Asp	Asp	Leu	Glu	Ile	580	585	590
Ala	Asp	Pro	Gly	Ser	Asn	Trp	Arg	Val	Gln	Ser	Phe	Asn	Glu	Leu	Glu	595	600	605
Lys	Phe	Leu	Tyr	Ser	Phe	Leu	Asp	Ser	Ser	Thr	Ala	Thr	Gly	Met	Glu	610	615	620
Arg	Ile	Arg	Leu	Lys	Leu	Glu	Thr	Pro	Met	Ala	Ile	Ala	Glu	Arg	Leu	625	630	635
Leu	Ser	Ser	Val	Glu	Ala	Leu	Val	Arg	Gln	Asp	Cys	Leu	Ala	Ala	Arg	645	650	655
Glu	Asp	Leu	Ala	Ser	Ala	Asp	Lys	Ile	Ile	Ser	Arg	Thr	Lys	Glu	Tyr	660	665	670
Ala	Leu	Lys	Met	Glu	Tyr	Glu	Ser	Ile	Ser	Trp	Arg	Arg	Gln	Ala	Leu	675	680	685
Ser	Leu	Ile	Asp	Asn	Ala	Arg	Leu	Gln	Val	Val	Asp	Leu	Ile	Gly	Thr	690	695	700
Thr	Leu	Arg	Leu	Ser	Ser	Leu	Asp	Leu	Ala	Ile	Ser	Tyr	Val	Phe	Lys	705	710	715
Gly	Glu	Lys	Ser	Ala	Ser	Val	Ala	Ala	Thr	Ser	Lys	Val	Gln	Gly	Glu	725	730	735
Ile	Leu	Ala	Pro	Ala	Leu	Thr	Asn	Ala	Lys	Glu	Leu	Leu	Gly	Lys	Tyr	740	745	750
Ala	Glu	Trp	Leu	Gln	Ser	Asn	Thr	Ala	Arg	Glu	Gly	Ser	Leu	Ser	Leu	755	760	765
Lys	Ser	Phe	Glu	Asn	Lys	Trp	Pro	Thr	Tyr	Val	Asn	Ser	Lys	Thr	Gln	770	775	780

Leu Gly Ile Asp Thr Tyr Asp Leu Leu Gln Lys Thr Asp Lys Val Ser
 785 790 795 800

Leu Lys Thr Ile Gln Asn Leu Ser Ala Gly Thr Thr Ser Lys Arg Leu
 805 810 815

Glu Gln Asp Ile Arg Glu Val
 820

<210> 25
 <211> 2037
 <212> DNA
 <213> Arabidopsis thaliana

<400> 25
 acaaagacca gttaaaaacg tgtgtagtat aacttactgg taagtaaagc tataagcaag 60
 aatctgtacc ttattttctc tctctctagt gagccctgac catccgaatt tcgcattcgc 120
 caatcgctgt gtttccgtgt gttttccccc tttttggttt tagatttgcc taaaccaatc 180
 agaacaagag aaacctggaa acaagaacca aaaaaagtgg gctttctctg catcatcatt 240
 ccacttctgg tccccaaactg aaaaggacaa tccaaagcta gatcccttca aattttcctt 300
 tttgttttcg aaattttcgc aatttttaat attattttgg aagtctatgt ttctttctga 360
 tcttttagcaa caaaggaagg tggaatctgt ttcacgttta cacaaaaaca tgtcaactgg 420
 agattttctc tttccctaac ttttgaccat acagtatggg ccatacttaa tattctctct 480
 ttgtttttta taaaataaaa ggtttggtta tcaagcatat atgtcattag cttaaagcta 540
 tgactttggt tagaaaactt aggaggacca tatggcaagc ttttatacag tgtagactt 600
 ctaacgttaa ttctaataca tctccagtat caagcattaa caaggtttat tctagcacct 660
 ctggattttt aaaacttctc gaaccaatcc ttaactaaaa aagaaattca agcgttttat 720
 ctttagaaat cacagctagc atatgctgag aattactctc catggaaact tatactaaga 780
 ttgttttttt cctcatatt taagccacta aagtcaaaag attagtacat tgacaactaa 840
 gtttagatgc tctatgcgga gaatcaattt catatgaatg tatcaagcaa ttcatgaact 900
 ctaggagacc ataaaatcca attgacagaa aaaatgagtc aactaacata tttacctgtg 960
 atatgaggta catgtgcagg tcaaagatca gaagaaaatt ttctccatga gtctcttgag 1020
 cttccaactc atccagcgat ttgtatcaca aacaatctga aaaagaagct aaaaaacggt 1080
 ataccaaagt ttcacgcca taatgctatt gtttggttct ttcaagaacc tccccaatct 1140
 tttgaattcg cattcaaaaa aaccatcagt gagtccattt caagtcggaa ctggcaggta 1200

ttattcatta tgacaaagta catacacttg cccccactg aacaatgtca agaagggaaa	1260
acccgacatt gtgttggaat agctaaagtc tcatctcgtc tcgtgatata tgaagggttat	1320
caatatcaac ttgtagcaac tgtaattttac ttctaataatc tgataattct ttctggattc	1380
ctaaaagacg atcaagtctt agctgagctt cttctcgata aggcttggca acaatattca	1440
caaagttaac tagattactc gtcgcatctg aaagatcttt ttgcatagcg tcttcgagct	1500
gttgagccaa cgcatacagcc actttattca ccttaccat tatagcctgt cttcgatatg	1560
ggaagtttgc tatagccaca tacctgtcac atagattatg ttatgcatac aaccagtctt	1620
tcttaaaaagt cataaatatg cctctagtgt caagaaaaaa atacactagg cgtgatctaa	1680
gaaggtggag taatgagaca ttgggaagag gggaaattta gagcagtgtt attaccctcc	1740
agcggagcaa aggccaagag caagaagatc ttccagtgtg gtcggtagca ctgagggttag	1800
aagtgatgca gacagtcctg cagctccaag cccaccaact gtcacaaaga actagaaaag	1860
gcaagcaaaa ctcaactatg tcaaaaagtgt cacttagatt gattcttgaa tagcgagacg	1920
aagtatctgg gaaaatacgg tactgaatta acatctccgt cagatcatag gttcggattg	1980
aacagatgac acaattaaac aatgatgaag atcaagacac tttaatcgac tgaattc	2037

<210> 26
 <211> 2097
 <212> DNA
 <213> Arabidopsis thaliana

<400> 26	
aaaaactttt caaaacttca tgtgttgtga aaacaaaagt tttttggtta tgaaaactcg	60
acaaagacca gttaaaaacg tgtgtagtat aacttactgg taagtaaagc tataagcaag	120
aatctgtacc ttattttctc tctctctagt gagccctgac catccgaatt tcgcattcgc	180
caatcgctgt gtttccgtgt gttttcccc tttttggttt tagatttgcc taaaccaatc	240
agaacaagag aaacctggaa acaagaacca aaaaaagtgg gctttctctg catcatcatt	300
ccacttctgg tccccactg aaaaggacaa tccaaagcta gatcccttca aattttcctt	360
tttgttttcg aaattttcgc aatttttaatt attatttttg aagtctatgt ttctttctga	420
tcttttagcaa caaaggaagg tggaatctgt ttcacgttta cacaaaaaca tgtcaactgg	480
agattttctc tttccctaac ttttgaccat acagtatggc ccatacttaa tattctctct	540
ttgtttttta taaaataaaa ggtttgggta tcaagcatat atgtcattag cttaaagcta	600
tgactttgtt tagaaaactt aggaggacca tatggcaagc ttttatacag tgttagactt	660
ctaacgttaa ttctaaacaa tctccagtat caagcattaa caaggtttat tctagcacct	720

ctggatTTTTT	aaaacttctc	gaaccaatcc	ttaactaaaa	aagaaattca	agcgTTTTt	780
ctttagaaat	cacagctagc	atatgctgag	aattactctc	catggaaact	tatactaaga	840
ttgtTTTTTTT	ccctcatatt	taagccacta	aagtcaaaaag	attagtacat	tgacaactaa	900
gtttagatgc	tctatgcgga	gaatcaattt	catatgaatg	tatcaagcaa	ttcatgaact	960
ctaggagacc	ataaaatcca	attgacagaa	aaaatgagtc	aactaacata	tttacctgtg	1020
atatgaggta	catgtgcagg	tcaaagatca	gaagaaaatt	ttctccatga	gtctcttgag	1080
cttccaactc	atccagcgat	ttgtatcaca	aacaatctga	aaaagaagct	aaaaaacgtt	1140
ataccaaagt	ttcacgcca	taatgctatt	gtttggttct	ttcaagaacc	tccccaatct	1200
tttgaattcg	cattcaaaaa	aaccatcagt	gagtccattt	caagtcggaa	ctggcaggta	1260
ttattcatta	tgacaaaagta	catacacttg	ccccccactg	aacaatgtca	agaagggaaa	1320
acccgacatt	gtgttggaat	agctaaagtc	tcctctcgtc	tcgtgatata	tgaaggttat	1380
caatatcaac	ttgtagcaac	tgtaatttac	ttctaataatc	tgataattct	ttctggattc	1440
ctaaaagacg	atcaagtctt	agctgagctt	cttctcgata	aggcttggca	acaatatcca	1500
caaagttaac	tagattactc	gtcgcactctg	aaagatcttt	ttgcatagcg	tcttcgagct	1560
gttgagccaa	cgcacagcc	actttattca	ccttaccaat	tatagcctgt	cttcgatatg	1620
ggaagtTTTgc	tatagccaca	tacctgtcac	atagattatg	ttatgcatac	aaccagtctt	1680
tcttaaaagt	cataaatatg	cctctagtgtg	caagaaaaaa	atacactagg	cgtgatctaa	1740
gaaggtggag	taatgagaca	ttgggaagag	gggaaattta	gagcagtgtt	attaccctcc	1800
agcggagcaa	aggccaagag	caagaagatc	ttccagtgtg	gtcggtagca	ctgagggttag	1860
aagtgatgca	gacagtccctg	cagctccaag	cccaccaact	gtcacaaaaga	actagaaaag	1920
gcaagcaaaa	ctcaactatg	tcaaaagtgt	cacttagatt	gattcttgaa	tagcgagacg	1980
aagtatctgg	gaaaatacgg	tactgaatta	acatctccgt	cagatcatag	gttcggattg	2040
aacagatgac	acaattaaac	aatgatgaag	atcaagacac	tttaatcgac	tgaattc	2097

<210> 27
 <211> 6400
 <212> DNA
 <213> Arabidopsis thaliana

<400> 27	
tagttagaac	ttagactaaa agtatttaat acttgaagct caccacttct cgaatatctt 60
gttccaatcg	ttttgatgtg gttccggcac tcaagttctg tattgttttc aagctgactt 120
tatcagtttt	ctgaagtaag tcatatgtgt ctatgccccaa ttgcgttttt gaattgacat 180

atgttggcca tttgttttcg aatgatttca gagacagact cccttcacgg gcagtatttg	240
attgtagcca ttcagcatat tttccaagca attcctgcaa acagtgaaat gtaaagtcaa	300
tcaggtcaca acaagacatt gttagacaat atttactttc tgcataaata gtgactatat	360
ctcagacctc atatatatga ccaacatgtc cccagttagg ccaatactca aagaataaag	420
catcacactt actttcgcac ttgtgagtg tggagcgagt atttcacctt gaactttgga	480
tgtagctgct actgaggccg atttttcccc tttgaacacg tacgagatcg caagatcaag	540
gcttgatagt cgcagggtag ttcctatcag atcaacaact tgtaatctgg cattatcaat	600
ctgcgataaa agccagagta caaaacacaa aaaaagccaag ttagaacaat ccaatttcct	660
ccttcgtgat tcaacaagat aatatctaata agaatttata ccaacgagag agcctgcctt	720
ctccaagaaa tgctctcata ttccatctta agcgcgtatt ctttagttcg actgataatc	780
ttgtctgctg aagccaagtc ttccttagca gctaggcaat cttgtctcac aagagcttcc	840
acagaagaaa ggagacgctc agcaatcgcc atgggtgtct ccaatttaag cttattctc	900
tccatcccgg tagctgttga gctatccaag aagctataaa gaaatttctc aagttcattg	960
aagctctgga ctctccaatt agaaccagga tctgcatct caagatcatc tctgccaacc	1020
aaagaagctg ttgaaagctt cgcctcaaga gcagaccgtg cggacaccgg atacaatctc	1080
acattttctg tattaagcaa cttccgtgta ttctctttaa caaatgaaat agcttctctca	1140
agctgcagca gtaaaattaa tcttttagtca agaaaaatcc agcaattaca gagactatca	1200
aggaaaagac ataaatattg tttctgataa acctcacgag catcacgata gatatcagat	1260
ttattcagaa taaacacaaa tttctttttc cactgctgtg tgtaccggag aaacgcaacc	1320
tgacaaacgc aatgagatgt aaatcagcct acagtaaaat caagacagca ggaagctcca	1380
gaggtagaga tagaaatgac atgggtatga tgacattgag aagcttattc cttcttttga	1440
aactttttca gatttttcaa ataagaacca aatattcata aggttagtac ttcgtagatg	1500
atcatttaca tacaatttgc catggacgta aaatcagttt tgctgtacca ataacaactc	1560
acctctcaaa tgtattggcc taagctttac caaaatatgg accaacagga catactgggt	1620
ccagcaatag ctataacact cattactttg aaaataaatt agtctagttt aaatttataa	1680
tcaacaaaac cttgatatat gcattcaacc tagtgacaac tttcccttcc ctacacaagg	1740
tcttgatggc ctatacatga cttaactaac tactttcgtg aaaaatagat ctaacaagct	1800
acttaggcag atacatattg agcaaaaaa acaacaacta acatgccaag taaaacggta	1860
acttctacct cactttcagt taaagggcgg tcagcagaaa gaacaaaaaac aagcaaatct	1920

gcacgtggaa	caaattcttc	tgtaagacgc	tgttgccctt	gaaggatcac	attggtccca	1980
ggtgtgtcaa	caatatttat	ctgctcgaaa	ggagaacaac	ccaaatcaat	tcctccaaat	2040
aattagtaaa	aattcaggac	tgcgatggta	gaattttgaa	ttactcacat	ccttaagtat	2100
tggtgcagga	agatagcata	catattggcc	atctggatgt	gtttggcaac	gttggtgctc	2160
ttcggattcc	aagtcagagt	agcacagaaa	cgtgatttca	ttggtagtgg	ggactacccc	2220
ttctttcagg	tatctcttcc	caagaagtgc	attgataacc	gttgattttc	cagagttaaa	2280
ttccccctag	taccagcaaa	ttgtggattc	caattaatta	tccatacaaa	aactattttg	2340
aatcataaag	gcaacttgtc	ccacttaaaa	catcttccaa	gaacggcata	ctcacaaagtc	2400
acaagaaagc	gaaaaaacta	tgtacacaag	cagatgggtac	agttaagaaa	tatgcagttc	2460
ccttacaacc	agatccataa	gcaaattaag	aagagaagca	tagacagaac	aaaagaagaa	2520
gcgaaacatc	atagtcatag	gcgacgaaag	aagatattga	gaagcactaa	aggacaagtg	2580
actagaagca	tgcccattgt	atctcaagct	atctagtgtc	ggcaaaaagt	tgtaactaaa	2640
atgtttctgg	aatgaatata	gagctaatac	caatgcaa	tcctggaatc	acaatttgac	2700
ggagttgagt	gcagaattac	cactataacc	atcagaaacg	gctcatcgat	ccgagaaaaca	2760
gcatcaatta	gaagggagac	ttcctccatc	tgттаatgaa	aaatagtcga	agaagtaa	2820
gaaaccatat	tataaccaca	caaaaaccta	cttagaacca	tttcaaaaaa	ttgacttcaa	2880
ctaccaaatg	tttgaaataa	aaatcaccag	tggagccgcc	ttgtggatga	tttcaatcgt	2940
ctctctcaac	acagatttct	ccatttctac	tattagtttc	tgtttgtcct	ctaattttat	3000
gaagccagca	gaattctttt	tctccggcag	ttcattcata	ttttgtgtct	catgattatt	3060
tacaacataa	gctccatcaa	gactctggcg	aagagctaca	tccttagaag	aacgcaa	3120
tttcaacgaa	ataacaaaac	cagaaacacc	tgatttcagt	aactgcaatt	cttcttttagc	3180
ttcttcattg	cctctgcaag	tcacatatat	cggatatttc	acgctcttca	acaaagaatc	3240
cgccacttgc	gtatcttctt	caccagatcc	aagtataagg	aaatcagcac	cctcggagct	3300
tgaggcaatt	agagcagaat	caacatcctt	cacaatccga	gctaccagt	gaagaagtac	3360
cgagtcgggg	ttggatccca	tcaatgtgtt	tctcgccaca	atcgccggaa	gacctgtaca	3420
tagcattgag	agacaaaact	cactctatga	gaaattaaat	gctaaaactg	aatgaaatca	3480
gttgttacct	tcgtcggaga	gagcaacacc	actagcacca	acggcggagg	cgatatcaac	3540
acgttcagcg	atcaagaggt	aagcacggcc	tttgacaagt	gatttcagca	aacaagccgc	3600
ctcgtagagc	ttaccagcgg	tggtccgcc	atcaatcacg	acgatttgaa	ccgatttagc	3660

taaagcacgg	tcgaccaa	at	caagagtctc	ttcacgattc	ccgctcataa	cctcgtcggc	3720
gtctagccgg	agaagtaaac		cgggaacggc	gagttcggga	cgcttgtaac	caccaggata	3780
aagagttcgc	ggcctagaag		aagaagtctg	atcggcggat	tcatgcgaaa	tgtttctgat	3840
cgagagagaa	gaaaaacgcc		tatgacgtgg	aggagtaaag	gaggataact	taaagcaccg	3900
gccaggaaac	ggtggagatg		cggcggagat	aagaaacggt	gacgtcacac	attgccggtg	3960
agagattaga	gttctcatgg		agagagaaaag	agagagagtg	agataccttc	gtctgtgttt	4020
ctgattagtt	ttcttatctc		ttaaatatcc	tattggccca	tcccaaagct	ataagacgga	4080
cggcgcgatt	aattactttt		caaacacatg	aattaacggt	ttcacatatg	tgttcatatc	4140
caaaagggtcc	aaagtatacc		acgaaaaggg	agaaaaacag	atttaaattc	gtgaaatccc	4200
tctcccacaa	ttaaattttac		ttcttccaaa	caaagacaaa	cggttgtaac	cagtcaagta	4260
agtgatacgg	caccactaga		tggtccagag	cctccatctt	ttttaatacg	aagaagattt	4320
gtcctttgtg	tgtatgaatt		taacaagttt	taattataga	tttgtgtgtg	tatgaattta	4380
aaaacctagt	acgtagcatc		agggaatgat	atcatagcta	ttttagttga	gctttcaaat	4440
aagagatgat	caaaatttag		aacttctaag	aacatgaacg	aataaacaac	tattttcttt	4500
tcaaaccaac	taaggtagat		ggtcactgaa	agtatataca	tcagataaaa	gttgcttggt	4560
attccagatg	aagttggacc		gagaaaaaaaa	aaagttactt	gttattcaat	atgtttggat	4620
ctttgtcttg	cagattgcta		tatagggttg	ataatgggct	tcgttgtaat	gggtatacag	4680
tgtataagaa	tcggccttgt		gcaaccaatc	ctaatatgtg	tgtctcatta	aggtaagtgc	4740
ttaagattag	aagagtaaaa		cacttgactt	atcaactatg	tcaactaagg	gttctatatt	4800
tttattaaat	aaaaaataat		tgaatatttt	ttagaatgat	ttaataaatt	taatgctatt	4860
gtttgattta	aatgtataat		tcaccgcgag	aagaaatttt	ataactcaaa	ttttaaggtt	4920
ttaagttgta	tttgtttatt		ttgttaaagt	tttaatatgt	tataattgta	ttttgattgt	4980
tgtttctcgg	atttcacccg		tagtacatca	tcccatatta	atatcgaatc	aaacccgtca	5040
attctaaaaat	ttcacccgtg		gtagtattta	attgtataat	tatattttta	ttgtcattct	5100
aagatttcac	tcctaattct		atcgcaaatt	attatcaacc	caaaccagtc	aattctaaaa	5160
tatcacccgt	agtacaccat		cccatattaa	tatcgaatca	agcccgtaa	ttctaggatt	5220
tcacccgtgg	tagtatttaa		ttgtataatt	atattttaat	tgtcattcta	ggatttcact	5280
cctaattcta	tcgcaaatta		ttatcaaccc	aaaccagtc	attctaaaaat	atcacccgta	5340
gtacaccatc	ccatattaat		atcgattcaa	actcgtcaat	tctaggattt	cgctcgtggg	5400

```

agtatTTaat tgtataatta tattTTtaatt gtcattTTtaa ctctagttc tatcgcaaT 5460
tcttatcaac ccaaacagtc aattctaaaa tttcaccCGT agtataaaGT ttaaataTTT 5520
ataataTTTa aatttcttat aaaagaatca aaatgtgttt taaaaaaatt aaagttTTTa 5580
gttttttttt tTTaatattg ttaattttgt ttagtgTTTa agattatata attacattat 5640
gattgtcatt atatgtTTTT ctccatagca tactatccca tgttattatc cactcaaacc 5700
tgtcacacca tataacCCCG tccCGtgaaa ttaaAcacaa atttgtcatt ttattataaa 5760
tttcaaatat ttataaaatt agaaacttca aaaaagatta atattgacCC aaacttcatc 5820
attgaatttt gagtgTTata tctaagattt ctctcgcaat atatcgTccc gtattaatat 5880
cttttatatt gtTTaaattt cttgTaaaat ttaattTata atttttTaaa cttttTaaag 5940
tttcaatttt tTaaaataaa taaccctagg aaacaaacca tTTtaattTa aagataaaact 6000
ttataaaaag tttttaaaat tataataTTT aacttttgat aaagttataa tatttataat 6060
ttcttgaaac attttaaagt ttcaattctt taaaataata aatccgagTa aaatcagata 6120
actattTTTa ttttggaCGc ttgataaatc aagcttCctg ctcatTCgTa atcagaatca 6180
ttttggTcct tttataatat gggTctgaac cattgtccaa tttttctaaG cgatgtggga 6240
cattgtacac atattatttc tTcataggTt gaataatata tgtccgTTTa aaaaactttg 6300
aattacatca tattcagaaa aaaatataat attttattTa ctatatatat tttatataaa 6360
ttcaaaataa ataaagtata agatcaaata aaaatgaaag 6400

```

```

<210> 28
<211> 30
<212> PRT
<213> Arabidopsis thaliana

```

```

<400> 28

```

```

Met Glu Ala Leu Ser His Val Gly Ile Gly Leu Ser Pro Phe Gln Leu
1           5           10           15

```

```

Cys Arg Leu Pro Pro Ala Thr Thr Lys Leu Arg Arg Ser His
          20           25           30

```

```

<210> 29
<211> 24
<212> DNA
<213> Artificial Sequence

```

```

<220>
<223> Synthetic

```

<400> 29	
tgtccaaatt ttatgtgaca ctcc	24
<210> 30	
<211> 23	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Synthetic	
<400> 30	
ttgtgaaagg cttgaatgta aga	23
<210> 31	
<211> 20	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Synthetic	
<400> 31	
ccgaattctc tgtgttggcg	20
<210> 32	
<211> 24	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Synthetic	
<400> 32	
aagcttcgta cagaccctgc tgac	24
<210> 33	
<211> 18	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Synthetic	
<400> 33	
ggtaagttga cgggtcaag	18
<210> 34	
<211> 19	
<212> DNA	
<213> Artificial Sequence	

<220>
 <223> Synthetic

 <400> 34
 cgatagggcc gtagctgtc 19

 <210> 35
 <211> 19
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic

 <400> 35
 ggттаacttg tgatcgaac 19

 <210> 36
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic

 <400> 36
 gcagccagtc tgccctag 18

 <210> 37
 <211> 19
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic

 <400> 37
 gcgcagtcct ttcttgagg 19

 <210> 38
 <211> 19
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic

 <400> 38
 ctgaccggtg aggttctgc 19

<210>	39	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Synthetic	
<400>	39	
	ccaggaatcg ctgaacattc	20
<210>	40	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Synthetic	
<400>	40	
	gcgatcgcggt tagcttttcgg	20
<210>	41	
<211>	17	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Synthetic	
<400>	41	
	ctaggcagtg tacgttc	17
<210>	42	
<211>	28	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Synthetic	
<400>	42	
	ccgaattcgt gacctctacc cgtactgc	28
<210>	43	
<211>	28	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Synthetic	

<400> 43 ccaagcttcg tttataaag gcgctcag	28
<210> 44 <211> 19 <212> DNA <213> Artificial Sequence	
<220> <223> Synthetic	
<400> 44 ctgctcgtga gcaatttgc	19
<210> 45 <211> 16 <212> DNA <213> Artificial Sequence	
<220> <223> Synthetic	
<400> 45 ccgttctgaa aggctc	16
<210> 46 <211> 16 <212> DNA <213> Artificial Sequence	
<220> <223> Synthetic	
<400> 46 cagtgaattg taatac	16
<210> 47 <211> 18 <212> DNA <213> Artificial Sequence	
<220> <223> Synthetic	
<400> 47 gaaatagcca tcgcgagc	18
<210> 48 <211> 29 <212> DNA <213> Artificial Sequence	

<220>
 <223> Synthetic

 <400> 48
 ccgaattcgt ggcagtggaa aatcgtggg 29

 <210> 49
 <211> 27
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic

 <400> 49
 ccgaattcca cttgcacgat tgggatc 27

 <210> 50
 <211> 28
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic

 <400> 50
 ccgaattcgc cctactcatt aactatag 28

 <210> 51
 <211> 27
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic

 <400> 51
 ccgaattccg gagcgatcgc ttgtttg 27

 <210> 52
 <211> 24
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic

 <400> 52
 gattaatgag actatatatg agag 24

<210>	53	
<211>	24	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Synthetic	
<400>	53	
	atctgcataa cttcaattga actg	24
<210>	54	
<211>	22	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Synthetic	
<400>	54	
	gaacccccag aatatcaaca tc	22
<210>	55	
<211>	23	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Synthetic	
<400>	55	
	gctctgatgg tgattctggt aac	23
<210>	56	
<211>	26	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Synthetic	
<400>	56	
	gtagcattct ttagagattg atctag	26
<210>	57	
<211>	28	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Synthetic	

<400> 57 tattcgagtt tgaaattatg atttatgc	28
<210> 58 <211> 24 <212> DNA <213> Artificial Sequence	
<220> <223> Synthetic	
<400> 58 gctacagttc tcaaccggta aatc	24
<210> 59 <211> 29 <212> DNA <213> Artificial Sequence	
<220> <223> Synthetic	
<400> 59 cataagcttt tatgctccaa aatagtctc	29
<210> 60 <211> 24 <212> DNA <213> Artificial Sequence	
<220> <223> Synthetic	
<400> 60 cttgatcttg tgttctgaca tctc	24
<210> 61 <211> 27 <212> DNA <213> Artificial Sequence	
<220> <223> Synthetic	
<400> 61 ctaaactatt cacaaatgcc atagacg	27
<210> 62 <211> 24 <212> DNA <213> Artificial Sequence	

<220>
 <223> Synthetic

 <400> 62
 agccgtcttg tcccatcatt aaag 24

 <210> 63
 <211> 26
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic

 <400> 63
 gcacaaacaa acagggtaa tagtta 26

 <210> 64
 <211> 23
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic

 <400> 64
 ttaaagtga gcttaagcag agg 23

 <210> 65
 <211> 24
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic

 <400> 65
 cattgtaga aagtcaacac ttg 24

 <210> 66
 <211> 23
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic

 <400> 66
 gcaagacata accaatgaac aag 23

<210>	67	
<211>	22	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Synthetic	
<400>	67	
	gacacgtatg cgtttctaag ag	22
<210>	68	
<211>	24	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Synthetic	
<400>	68	
	ctccaacttc aagcaaaacg gatg	24
<210>	69	
<211>	24	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Synthetic	
<400>	69	
	ctctgttttt tgggctagtg atgg	24
<210>	70	
<211>	22	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Synthetic	
<400>	70	
	gcatacccaa tatcctttgt gc	22
<210>	71	
<211>	23	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Synthetic	

<400> 71	
gatagtataa ccagaggttg gag	23
<210> 72	
<211> 25	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Synthetic	
<400> 72	
gaatcttctc aaactgaaat ccacc	25
<210> 73	
<211> 22	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Synthetic	
<400> 73	
tcgaaaggaa gatcggtgaa cc	22
<210> 74	
<211> 24	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Synthetic	
<400> 74	
gattgtgcta tggttcagga gttc	24
<210> 75	
<211> 23	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Synthetic	
<400> 75	
catcagctat aacctcctca gtg	23
<210> 76	
<211> 24	
<212> DNA	
<213> Artificial Sequence	

<220>
 <223> Synthetic

 <400> 76
 actgactata aggacccctc aaac 24

<210> 77
 <211> 28
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic

 <400> 77
 gttgaccata attcatccac cactatta 28

<210> 78
 <211> 27
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic

 <400> 78
 ggaattccga gtcgagttgc tttgttg 27

<210> 79
 <211> 30
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic

 <400> 79
 cgtctagagc ttacctcaaa ggtacatgga 30

<210> 80
 <211> 28
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic

 <400> 80
 cgggatccat gagtaaagga gaagaact 28

<210>	81	
<211>	27	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Synthetic	
<400>	81	
	gctctagata gttcatccat gccatgt	27
<210>	82	
<211>	28	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Synthetic	
<400>	82	
	ggactagtagc gatggcggaa gtatcagc	28
<210>	83	
<211>	30	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Synthetic	
<400>	83	
	cgggatccgc accgaaggag ccttttagatt	30
<210>	84	
<211>	27	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Synthetic	
<400>	84	
	gactagttgg ctcaacgctt acctcaa	27
<210>	85	
<211>	25	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Synthetic	

<400> 85
 cgggatccgc catcgtctct tacga

25

<210> 86
 <211> 61
 <212> PRT
 <213> Arabidopsis thaliana

<400> 86

Asp Pro Tyr Lys Thr Leu Lys Ile Arg Pro Asp Ser Ser Glu Tyr Glu
 1 5 10 15

Val Lys Lys Ala Phe Arg Gln Leu Ala Lys Lys Tyr His Pro Asp Val
 20 25 30

Cys Arg Gly Ser Asn Cys Gly Val Gln Phe Gln Thr Ile Asn Glu Ala
 35 40 45

Tyr Asp Ile Val Leu Lys Gln Ile Lys Asn Gln Met Glu
 50 55 60

<210> 87
 <211> 68
 <212> PRT
 <213> Phaseolus vulgaris

<400> 87

Ser Leu Tyr Asp Ile Leu Gly Ile Pro Ala Gly Ala Ser Ser Gln Glu
 1 5 10 15

Ile Lys Ala Ala Tyr Arg Arg Leu Ala Arg Val Cys His Pro Asp Val
 20 25 30

Ala Ala Ile Asp Arg Lys Asn Ser Ser Ala Asp Glu Phe Met Lys Ile
 35 40 45

His Ala Ala Tyr Ser Thr Leu Ser Asp Pro Asp Lys Arg Ala Asn Tyr
 50 55 60

Asp Arg Ser Leu
 65

<210> 88
 <211> 68
 <212> PRT
 <213> Arabidopsis thaliana

<400> 88

Ser Leu Tyr Glu Ile Leu Glu Ile Pro Val Gly Ser Thr Ser Gln Glu
1 5 10 15

Ile Lys Ser Ala Tyr Arg Arg Leu Ala Arg Ile Cys His Pro Asp Val
20 25 30

Ala Arg Asn Ser Arg Asp Asn Ser Ser Ala Asp Asp Phe Met Lys Ile
35 40 45

His Ala Ala Tyr Cys Thr Leu Ser Asp Pro Glu Lys Arg Ala Val Tyr
50 55 60

Asp Arg Arg Thr
65

<210> 89

<211> 63

<212> PRT

<213> *Mycoplasma pneumoniae*

<400> 89

Thr Leu Tyr Asp Leu Leu Glu Leu Pro Gln Thr Ala Thr Leu Gln Glu
1 5 10 15

Ile Lys Thr Ala Tyr Lys Arg Leu Ala Lys Arg Tyr His Pro Asp Ile
20 25 30

Asn Lys Gln Gly Ala Asp Thr Phe Val Lys Ile Asn Asn Ala Tyr Ala
35 40 45

Val Leu Ser Asp Thr Thr Gln Lys Ala Glu Tyr Asp Ala Met Leu
50 55 60

<210> 90

<211> 63

<212> PRT

<213> *Mycoplasma genitalium*

<400> 90

Asn Leu Tyr Asp Leu Leu Glu Leu Pro Thr Thr Ala Ser Ile Lys Glu
1 5 10 15

Ile Lys Ile Ala Tyr Lys Arg Leu Ala Lys Arg Tyr His Pro Asp Val
20 25 30

Asn Lys Leu Gly Ser Gln Thr Phe Val Glu Ile Asn Asn Ala Tyr Ser
 35 40 45

Ile Leu Ser Asp Pro Asn Gln Lys Glu Lys Tyr Asp Ser Met Leu
 50 55 60

<210> 91
 <211> 68
 <212> PRT
 <213> Arabidopsis thaliana

<400> 91

Ser Phe Tyr Asp Leu Leu Gly Val Thr Glu Ser Val Thr Leu Pro Glu
 1 5 10 15

Ile Lys Gln Ala Tyr Lys Gln Leu Ala Arg Lys Tyr His Pro Asp Val
 20 25 30

Ser Pro Pro Asp Arg Val Glu Glu Tyr Thr Asp Arg Phe Ile Arg Val
 35 40 45

Gln Glu Ala Tyr Glu Thr Leu Ser Asp Pro Arg Arg Arg Val Leu Tyr
 50 55 60

Asp Arg Asp Leu
 65

<210> 92
 <211> 69
 <212> PRT
 <213> Drosophila melanogaster

<400> 92

Asn Cys Tyr Asp Val Leu Gly Val Thr Arg Glu Ser Ser Lys Ser Glu
 1 5 10 15

Ile Gly Lys Ala Tyr Arg Gln Leu Ala Arg Arg Tyr His Pro Asp Leu
 20 25 30

His Arg Gly Ala Glu Ala Lys Ala Ala Ala Glu Thr Gln Phe Lys Leu
35 40 45

Val Ala Thr Ala Tyr Glu Ile Leu Arg Asp Glu Glu Ser Arg Thr Asp
50 55 60

Tyr Asp Tyr Met Leu
65

<210> 93
<211> 70
<212> PRT
<213> *Caenorhabditis elegans*

<400> 93

Asn Cys Tyr Asp Val Leu Glu Val Asn Arg Glu Glu Phe Asp Lys Gln
1 5 10 15

Lys Leu Ala Lys Ala Tyr Arg Ala Leu Ala Arg Lys His His Pro Asp
20 25 30

Arg Val Lys Asn Lys Glu Glu Lys Leu Leu Ala Glu Glu Arg Phe Arg
35 40 45

Val Ile Ala Thr Ala Tyr Glu Thr Leu Lys Asp Asp Glu Ala Lys Thr
50 55 60

Asn Tyr Asp Tyr Tyr Leu
65 70

<210> 94
<211> 72
<212> PRT
<213> *Arabidopsis thaliana*

<400> 94

Ser Pro Tyr Asp Thr Leu Glu Leu Asp Arg Asn Ala Glu Glu Glu Gln
1 5 10 15

Ile Lys Val Ala Tyr Arg Arg Leu Ala Lys Phe Tyr His Pro Asp Val
20 25 30

Tyr Asp Gly Lys Gly Thr Leu Glu Glu Gly Glu Thr Ala Glu Ala Arg
35 40 45

Phe Ile Lys Ile Gln Ala Ala Tyr Glu Leu Leu Met Asp Ser Glu Lys
 50 55 60

Lys Val Gln Tyr Asp Met Asp Asn
 65 70

<210> 95
 <211> 68
 <212> PRT
 <213> Schizosaccharomyces pombe

<400> 95

Lys Leu Tyr Asp Ile Leu Glu Val His Phe Glu Ala Ser Ala Glu Glu
 1 5 10 15

Ile Lys Lys Ser Tyr Lys Arg Leu Ala Leu Leu His His Pro Asp Lys
 20 25 30

Ala Pro Ile His Glu Lys Glu Glu Ala Ala Glu Arg Phe Arg Gly Val
 35 40 45

Gln Glu Ala Tyr Asp Ile Leu Lys Asp Pro Glu Ser Arg Glu Met Tyr
 50 55 60

Asp Met Tyr Gly
 65

<210> 96
 <211> 66
 <212> PRT
 <213> Unknown

<220>
 <223> Synthetic

<400> 96

Asp Phe Tyr Lys Ile Leu Gly Ala Glu Pro His Phe Leu Gly Asp Gly
 1 5 10 15

Ile Arg Arg Ala Phe Glu Ser Arg Ile Ala Lys Pro Pro Gln Tyr Gly
 20 25 30

Tyr Ser Thr Glu Ala Leu Ala Gly Arg Arg Gln Met Leu Gln Ile Ala
35 40 45

His Asp Thr Leu Thr Asn Gln Ser Ser Arg Thr Glu Tyr Asp Arg Ala
50 55 60

Leu Ser
65

<210> 97
<211> 66
<212> PRT
<213> Oryza sativa

<400> 97

Asp Phe Tyr Lys Val Leu Gly Ala Glu Pro His Phe Leu Gly Asp Gly
1 5 10 15

Ile Arg Arg Ala Phe Glu Ala Arg Ile Ala Lys Pro Pro Gln Tyr Gly
20 25 30

Tyr Ser Thr Asp Ala Leu Val Gly Arg Arg Gln Met Leu Gln Ile Ala
35 40 45

His Asp Thr Leu Met Asn Gln Asn Ser Arg Thr Gln Tyr Asp Arg Ala
50 55 60

Leu Ser
65

<210> 98
<211> 66
<212> PRT
<213> Solanum tuberosum

<400> 98

Asp Phe Tyr Arg Val Leu Gly Ala Glu Ala His Phe Leu Gly Asp Gly
1 5 10 15

Ile Arg Arg Cys Tyr Asp Ala Arg Ile Thr Lys Pro Pro Gln Tyr Gly
20 25 30

Tyr Ser Gln Glu Ala Leu Ile Gly Arg Arg Gln Ile Leu Gln Ala Ala
35 40 45

Cys Glu Thr Leu Ala Asp Ser Thr Ser Arg Arg Glu Tyr Asn Gln Gly
 50 55 60

Leu Ala
 65

<210> 99
 <211> 66
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic

<400> 99

Asp Leu Tyr Lys Ile Leu Gly Ala Glu Thr His Phe Leu Gly Asp Gly
 1 5 10 15

Ile Arg Arg Ala Tyr Glu Ala Lys Phe Ser Lys Pro Pro Gln Tyr Ala
 20 25 30

Phe Ser Asn Glu Ala Leu Ile Ser Arg Arg Gln Ile Leu Gln Ala Ala
 35 40 45

Cys Glu Thr Leu Ala Asp Pro Ala Ser Arg Arg Glu Tyr Asn Gln Ser
 50 55 60

Leu Val
 65

<210> 100
 <211> 66
 <212> PRT
 <213> Arabidopsis thaliana

<400> 100

Asp Phe Tyr Gln Val Leu Gly Ala Gln Thr His Phe Leu Thr Asp Gly
 1 5 10 15

Ile Arg Arg Ala Phe Glu Ala Arg Val Ser Lys Pro Pro Gln Phe Gly
 20 25 30

Phe Ser Asp Asp Ala Leu Ile Ser Arg Arg Gln Ile Leu Gln Ala Ala
 35 40 45

Cys Glu Thr Leu Ser Asn Pro Arg Ser Arg Arg Glu Tyr Asn Glu Gly
 50 55 60

Leu Leu
 65

<210> 101
 <211> 66
 <212> PRT
 <213> Protochlorococcus marinus MED4

<400> 101

Asp His Phe Arg Leu Ile Gly Val Ser Pro Ser Ala Thr Ser Glu Glu
 1 5 10 15

Ile Leu Arg Ala Phe Gln Leu Arg Leu Asp Lys Thr Pro Asp Glu Gly
 20 25 30

Phe Thr Tyr Glu Val Leu Thr Gln Arg Ser Glu Leu Leu Arg Leu Thr
 35 40 45

Ala Asp Leu Leu Thr Asp Pro Asp Ser Arg Arg Asp Tyr Glu Asn Leu
 50 55 60

Leu Leu
 65

<210> 102
 <211> 66
 <212> PRT
 <213> Protochlorococcus marinus MT9313

<400> 102

Asp His Phe Arg Leu Leu Gly Val Ser Pro Ser Ala Asp Ser Glu Ala
 1 5 10 15

Ile Leu Arg Ala Leu Glu Leu Arg Leu Asp Arg Cys Pro Asp Gln Gly
 20 25 30

Phe Thr His Glu Val Leu Ile Gln Arg Ala Glu Leu Leu Arg Leu Ser
35 40 45

Ala Asp Leu Leu Thr Asp Pro Pro Arg Arg Gln Ala Tyr Glu Thr Ala
50 55 60

Leu Leu
65

<210> 103
<211> 66
<212> PRT
<213> Synechocystis PCC6803

<400> 103

Asp His Phe Arg Leu Leu Gly Val Ser Pro Ser Ala Asp Pro Ala Ser
1 5 10 15

Ile Leu Arg Arg Leu Gln Thr Arg Ser Asp Ser Pro Pro Asp Asp Gly
20 25 30

Phe Thr His Glu Gly Leu Leu Gln Arg Gln Ala Leu Leu His Arg Ser
35 40 45

Ala Asp Leu Leu Thr Asp Pro Ser Glu Arg Ala Asp Tyr Glu Ala Ala
50 55 60

Leu Leu
65

<210> 104
<211> 66
<212> PRT
<213> Synechocystis PCC6803

<400> 104

Asp Phe Tyr Arg Ile Leu Gly Ile Pro Pro Gln Ser Gly Gly Glu Thr
1 5 10 15

Ile Glu Gln Ala Tyr Gln Asp Arg Leu Leu Gln Leu Pro Arg Arg Glu
20 25 30

Phe Ser Asp Ala Ala Val Thr Leu Arg Asn Gln Leu Leu Ala Ile Ala
35 40 45

Tyr Glu Thr Leu Arg Asp Pro Glu Lys Arg Gln Ala Tyr Asp Gln Glu
50 55 60

Trp Trp
65

<210> 105
<211> 66
<212> PRT
<213> Nostoc punctiforme

<400> 105

Asp Tyr Tyr Arg Ile Leu Gly Leu Pro Leu Ala Ala Ser Glu Glu Gln
1 5 10 15

Leu Arg Gln Ala Tyr Ser Asp Arg Ile Val Gln Leu Pro Arg Arg Glu
20 25 30

Tyr Ser Gln Ala Ala Ile Ser Ser Arg Lys Gln Leu Ile Glu Glu Ala
35 40 45

Tyr Val Val Leu Ser Asp Pro Lys Gln Arg Ser Thr Tyr Asp Gln Leu
50 55 60

Tyr Leu
65

<210> 106
<211> 66
<212> PRT
<213> Anabaena PCC7120

<400> 106

Asp Tyr Tyr Arg Ile Leu Gly Leu Pro Leu Ala Ala Ser Asp Glu Gln
1 5 10 15

Leu Arg Gln Ala Tyr Ser Asp Arg Ile Val Gln Leu Pro Arg Arg Glu
20 25 30

Tyr Ser Gln Ala Ala Ile Ala Ser Arg Lys Gln Leu Ile Glu Glu Ala
35 40 45

Tyr Val Val Leu Ser Asp Pro Lys Glu Arg Ser Ser Tyr Asp Gln Leu
50 55 60

Tyr Leu
65

<210> 107
<211> 66
<212> PRT
<213> Bombyx mori

<400> 107

Asp Tyr Tyr Ala Leu Leu Gly Cys Asp Glu Asn Ser Thr Val Glu Gln
1 5 10 15

Ile Thr Ala Glu Tyr Lys Ile Leu Ala Leu Gln His His Pro Asp Lys
20 25 30

Asn Asp Gly Glu Lys Glu Ala Glu Met Lys Phe Gln Lys Leu Lys Glu
35 40 45

Ala Lys Glu Ile Leu Cys Asp Pro Ser Lys Arg Ala Leu Tyr Asp Lys
50 55 60

Trp Arg
65

<210> 108
<211> 66
<212> PRT
<213> Drosophila melanogaster

<400> 108

Asp Phe Tyr Gly Leu Leu His Cys Asp Glu Asn Ser Ser Pro Glu Gln
1 5 10 15

Ile Gln Ala Glu Tyr Lys Val Leu Ala Leu Gln Tyr His Pro Asp Lys
20 25 30

Asn Ser Gly Asp Lys Glu Ala Glu Ala Lys Phe Gln Gln Leu Lys Glu
35 40 45

Ala Lys Glu Thr Leu Cys Asp Pro Glu Lys Arg Ala Ile Tyr Asp Lys
50 55 60

Trp Arg
65

<210> 109
<211> 66
<212> PRT
<213> Mus musculus
<400> 109

Asp Tyr Tyr Ala Leu Leu Gly Cys Asp Glu Leu Ser Ser Val Glu Gln
1 5 10 15

Ile Leu Ala Glu Phe Lys Ile Arg Ala Leu Glu Cys His Pro Asp Lys
20 25 30

His Pro Glu Asn Ser Lys Ala Val Glu Thr Phe Gln Lys Leu Gln Lys
35 40 45

Ala Lys Glu Ile Leu Cys Asn Ala Glu Ser Arg Ala Arg Tyr Asp His
50 55 60

Trp Arg
65

<210> 110
<211> 65
<212> PRT
<213> Saccharomyces cerevisiae
<400> 110

Asp Ala Tyr Ser Ile Leu Gly Val Pro Pro Asp Ser Ser Gln Glu Gln
1 5 10 15

Ile Arg Lys His Tyr Lys Lys Ile Ala Val Leu Val His Pro Asp Lys
20 25 30

Asn Lys Gln Ala Gly Ala Glu Glu Ala Phe Lys Val Leu Gln Arg Ala
35 40 45

Phe Glu Leu Ile Gly Glu Pro Glu Asn Arg Leu Ile Tyr Asp Gln Ser
 50 55 60

Ile
 65

<210> 111
 <211> 64
 <212> PRT
 <213> Leishmania major

<400> 111

Glu Leu Tyr Gln Val Leu Glu Leu Asp Ala Gln Cys Thr Thr Ala Glu
 1 5 10 15

Ile Ser Gln Gln Tyr Arg Arg Leu Ala Leu Arg Tyr His Pro Asp Arg
 20 25 30

Asn Ala Gly Ala Thr Val Glu Gln Phe Gln Arg Ile Glu Glu Ala His
 35 40 45

Arg Val Leu Ser Asp Leu Arg Gln Arg Gln Leu Tyr Asp Thr Val Gly
 50 55 60

<210> 112
 <211> 67
 <212> PRT
 <213> Schizosaccharomyces pombe

<400> 112

Asp Tyr Tyr Thr Ile Leu Gly Ala Glu Ser Thr Ser Ser Tyr Val Glu
 1 5 10 15

Ile Arg Gln Gln Tyr Leu Lys Leu Val Leu Arg Tyr His Pro Asp Arg
 20 25 30

Asn Pro Gly Arg Glu Ala Glu Val Leu Pro Gln Phe Gln Leu Ile Gln
 35 40 45

Lys Ala His Glu Val Leu Lys Asp Pro Lys Leu Arg Glu Leu Phe Asp
 50 55 60

Gln Arg Arg
 65

<210> 113
 <211> 67
 <212> PRT
 <213> Schizosaccharomyces pombe

<400> 113

Asp Tyr Tyr Ala Ile Leu Lys Leu Gln Lys Asn Ala Thr Phe Gln Gln
 1 5 10 15

Ile Arg Lys Gln Tyr Leu Phe Leu Ala Leu Gln Tyr His Pro Asp Arg
 20 25 30

Asn Pro Gly Asp Glu Glu Arg Ala Val Lys Arg Phe Gln Arg Leu Gln
 35 40 45

Leu Ala His Glu Val Leu Ser Asp Ala Thr Lys Arg Leu Ile Tyr Asp
 50 55 60

Gln Leu Phe
 65

<210> 114
 <211> 68
 <212> PRT
 <213> Schizosaccharomyces pombe

<400> 114

Asn His Tyr Ser Val Leu Asn Leu Lys Asp Gly Lys Thr Tyr Thr Asp
 1 5 10 15

Asp Glu Ile Lys Glu Ala Tyr Arg Lys Ala Leu Leu Leu Phe His Pro
 20 25 30

Asp Lys Cys Lys Glu Lys Pro Ser Val Val Tyr Thr Ile Asp Gln Val
 35 40 45

Lys Glu Ala Tyr Gln Val Leu Ser Ser Glu Lys Asp Arg Gln Gln Tyr
 50 55 60

Gln Ile Lys Gln
 65

<210> 115
 <211> 652
 <212> PRT
 <213> Anabaena PCC7120

<400> 115

Gln Gly Lys Tyr Ala Val Arg Ile Pro Leu Asp Tyr Tyr Arg Ile Leu
 1 5 10 15

Gly Leu Pro Leu Ala Ala Ser Asp Glu Gln Leu Arg Gln Ala Tyr Ser
 20 25 30

Asp Arg Ile Val Gln Leu Pro Arg Arg Glu Tyr Ser Gln Ala Ala Ile
 35 40 45

Ala Ser Arg Lys Gln Leu Ile Glu Glu Ala Tyr Val Val Leu Ser Asp
 50 55 60

Pro Lys Glu Arg Ser Ser Tyr Asp Gln Leu Tyr Leu Ala His Ala Tyr
 65 70 75 80

Asp Pro Asp Asn Ala Ala Thr Thr Lys Val Ala Val Glu Asn Arg Gly
 85 90 95

Asp Ser Asn Asn Gly His Phe Asp Val Gln Ser Leu Ser Ile Glu Val
 100 105 110

Ser Ser Glu Glu Leu Ile Gly Ala Leu Leu Ile Leu Gln Glu Leu Gly
 115 120 125

Glu Tyr Glu Leu Val Leu Lys Leu Gly Arg Asn Tyr Leu Gly Asn Gln
 130 135 140

Asn Gly Thr Ala Ser Thr Arg Asn Gly Asn His Arg Thr Pro Glu Glu
 145 150 155 160

Phe Leu Asp Ser Ser Glu Arg Pro Asp Ile Leu Leu Thr Val Ala Leu
 165 170 175

Ala Ser Leu Glu Leu Gly Arg Glu Gln Trp Gln Gln Gly His Tyr Glu
 180 185 190

Asn Ala Ala Leu Ser Leu Glu Thr Gly Gln Glu Val Leu Phe Ser Glu
 195 200 205

Gly Ile Phe Pro Ser Val Gln Ala Glu Ile Gln Ala Asp Leu Tyr Lys
 210 215 220
 Leu Arg Pro Tyr Arg Ile Leu Glu Leu Leu Ala Leu Pro Gln Glu Lys
 225 230 235 240
 Thr Ile Glu Arg His Gln Gly Leu Asp Leu Leu Gln Ser Ile Leu Asp
 245 250 255
 Asp Arg Gly Gly Ile Asp Gly Thr Gly Asn Asp Gln Ser Gly Leu Asn
 260 265 270
 Ile Asp Asp Phe Leu Arg Phe Ile Gln Gln Leu Arg His His Leu Thr
 275 280 285
 Val Ala Glu Gln His Lys Leu Phe Asp Gly Glu Ser Lys Arg Pro Ser
 290 295 300
 Ala Val Ala Thr Tyr Leu Ala Val Tyr Ala Ser Ile Ala Arg Gly Phe
 305 310 315 320
 Thr Gln Arg Gln Pro Ala Leu Ile Arg His Ala Lys Gln Ile Leu Met
 325 330 335
 Arg Leu Ser Lys Arg Gln Asp Val His Leu Glu Gln Ser Leu Cys Ala
 340 345 350
 Leu Leu Leu Gly Gln Thr Glu Glu Ala Thr Arg Val Leu Glu Leu Ser
 355 360 365
 Gln Glu Tyr Glu Ala Leu Ala Leu Ile Arg Glu Lys Ser Gln Asp Ser
 370 375 380
 Pro Asp Leu Leu Pro Gly Leu Cys Leu Tyr Ala Glu Gln Trp Leu Gln
 385 390 395 400
 Asn Glu Val Phe Pro His Phe Arg Asp Leu Ser Arg Gln Gln Ala Ser
 405 410 415
 Leu Lys Asp Tyr Phe Ala Asn Gln Gln Val Gln Ala Tyr Leu Glu Ala
 420 425 430

Leu Pro Asn Asp Ala Glu Thr Thr Asn Glu Trp Ala Val Ile Asn Arg
435 440 445

Gln Ser Phe Ser Gln Pro Arg Gly Asn Ser Tyr Ser Gly Gly Thr Pro
450 455 460

Val Ala Lys Arg Pro Val Gly Lys Ala Asn Arg Pro Gly Glu Ala Ser
465 470 475 480

Thr Arg Pro Val Pro Gln Arg Ser His Pro Ser Glu Val Asn Arg Gln
485 490 495

Phe His Gln Asn Arg Thr Pro Asp Pro Glu Leu Pro Glu Thr Ser Asn
500 505 510

His Arg Arg Pro Glu Ser Ser Asn Phe Thr Thr Ala Arg Glu Asn Ile
515 520 525

Ser Thr Thr Asp Ala Tyr Thr Asp Asn Tyr Pro Pro Glu Ile Pro Val
530 535 540

Glu Arg Ala Ser Arg Pro Val Gln Pro Gly Val Ser Gly Tyr Thr Gln
545 550 555 560

Ser Thr Pro Pro Arg Gln Thr Pro Lys Arg Arg Arg Arg Lys Lys Pro
565 570 575

Gln Ala Val Val Asn Arg Gly His Ser Ile His Gln Gln Arg Gln Pro
580 585 590

Ser Pro Ser Thr Leu Gly Arg Lys Thr Arg Leu Leu Trp Ile Val Leu
595 600 605

Gly Ser Leu Gly Gly Ile Leu Leu Phe Trp Leu Ile Val Ser Thr Thr
610 615 620

Phe Gly Trp Leu Lys Asn Val Phe Phe Pro Ala Pro Ser Leu Gln Gly
625 630 635 640

Glu Gln Leu Ser Ile Gln Ile Ser Gln Pro Pro Leu
645 650

<210> 116

<211> 624

<212> PRT

<213> Nostoc punctiforme

<400> 116

Met Arg Ile Pro Leu Asp Tyr Tyr Arg Ile Leu Gly Leu Pro Leu Ala
1 5 10 15

Ala Ser Glu Glu Gln Leu Arg Gln Ala Tyr Ser Asp Arg Ile Val Gln
20 25 30

Leu Pro Arg Arg Glu Tyr Ser Gln Ala Ala Ile Ser Ser Arg Lys Gln
35 40 45

Leu Ile Glu Glu Ala Tyr Val Val Leu Ser Asp Pro Lys Gln Arg Ser
50 55 60

Thr Tyr Asp Gln Leu Tyr Leu Ala His Ala Tyr Asp Pro Asp Asn Leu
65 70 75 80

Ala Ala Ala Ala Val Ala Gln Glu Asn Arg Thr Glu Ser Thr Lys Arg
85 90 95

Gly Ser Asp Thr Gln Ser Leu Gly Ile Glu Ile Thr Gln Asp Glu Leu
100 105 110

Val Gly Ala Leu Leu Ile Leu Gln Glu Leu Gly Glu Tyr Glu Leu Val
115 120 125

Leu Lys Leu Gly Arg Pro Tyr Leu Val Asn Lys Asn Ser Ala Thr Ser
130 135 140

Ser Arg Lys Ser Asn Asn Leu Ala Asp Glu Glu Ile Tyr Glu Ser Ala
145 150 155 160

Glu His Pro Asp Val Val Leu Thr Val Ala Leu Ala Cys Leu Glu Leu
165 170 175

Gly Arg Glu Gln Trp Gln Gln Gly His Tyr Glu Asn Ala Ala Ile Ser
180 185 190

Leu Glu Thr Gly Gln Glu Leu Leu Val Arg Glu Gly Leu Phe Ser Ser
195 200 205

Ile Gln Ala Glu Ile Gln Ala Asp Leu Tyr Lys Leu Arg Pro Tyr Arg
 210 215 220

Ile Leu Glu Leu Leu Ala Leu Pro Gln Glu Lys Thr Ala Glu Arg Ser
 225 230 235 240

Gln Gly Leu Glu Leu Leu Gln Asn Leu Leu Glu Asp Arg Gly Gly Ile
 245 250 255

Asp Gly Thr Asn Asn Asp Glu Ser Gly Leu Asn Ile Asp Asp Phe Leu
 260 265 270

Arg Phe Ile Gln Gln Leu Arg Asn His Leu Thr Val Ala Glu Gln His
 275 280 285

Lys Leu Phe Glu Ala Gln Ser Lys Arg Ser Ser Ala Val Ala Thr Tyr
 290 295 300

Leu Ala Val Tyr Ala Leu Ile Ala Arg Gly Phe Ala Gln Arg Gln Pro
 305 310 315 320

Ala Leu Ile Arg Gln Ala Arg Gln Met Leu Val Arg Leu Gly Lys Arg
 325 330 335

Gln Asp Val His Leu Glu Gln Ser Leu Cys Ala Leu Leu Leu Gly Gln
 340 345 350

Thr Glu Glu Ala Thr Arg Val Leu Glu Leu Ser Gln Glu Tyr Glu Ala
 355 360 365

Leu Ala Phe Ile Arg Glu Lys Ser Gln Asp Ser Pro Asp Leu Leu Pro
 370 375 380

Gly Leu Cys Leu Tyr Ala Glu Gln Trp Leu Gln His Glu Val Phe Pro
 385 390 395 400

His Phe Arg Asp Leu Ala Asn Gln Gln Ala Phe Leu Lys Asp Tyr Phe
 405 410 415

Ala Asn Gln Gln Val Gln Ala Tyr Leu Glu Ala Leu Pro Thr Asp Ala
 420 425 430

Gln Thr Thr Asn Glu Trp Ala Val Ile Asn Pro Gln Tyr Phe Pro Gln
 435 440 445

Ala Lys Ala Lys Asn Thr His Phe His Asn Asn Ser Thr Lys Thr Ser
 450 455 460

Ala Ser Phe Asn His Ser Arg Val Pro Asn Pro Asp Leu Pro Glu Thr
 465 470 475 480

Pro Thr Lys Glu Thr Ser Glu Tyr Pro Asn Phe Ser Pro Pro Met Trp
 485 490 495

Ser Ser Ser Gly Ser Ile Lys Ser Glu Val Pro Ala Ala Glu Arg Met
 500 505 510

Ser Arg Gly Thr Asn Gln His Leu Asn Gly Ser Ala Lys Ser Ala Ala
 515 520 525

Ser Gly His Asn Gln Lys Arg Arg Arg Arg Lys Pro Thr Pro Ser Ala
 530 535 540

Ser Arg Glu Arg Ile Pro Asp Asn Arg Pro His Ser Arg Arg Pro Arg
 545 550 555 560

Arg Arg Arg Thr Phe Ala Asn Thr Ile Glu Gly Lys Thr Arg Leu Val
 565 570 575

Trp Arg Val Phe Ile Ser Leu Val Ser Ile Leu Val Phe Trp Val Leu
 580 585 590

Ala Thr Thr Thr Phe Gly Trp Leu Lys Asn Leu Phe Phe Pro Gln Pro
 595 600 605

Ser Pro Pro Asp Leu Gln Leu Phe Val Gln Ile Asn Gln Pro Pro Leu
 610 615 620

<210> 117
 <211> 557
 <212> PRT
 <213> Protochlorococcus marinus MED4

<400> 117

Met Glu Leu Pro Leu Asp His Phe Arg Leu Ile Gly Val Ser Pro Ser
 1 5 10 15

Ala Thr Ser Glu Glu Ile Leu Arg Ala Phe Gln Leu Arg Leu Asp Lys
 20 25 30

Lys Arg Gly Ser Ser Glu Ala Gly Phe Leu Ala Phe Leu Ser Leu Thr
 260 265 270
 Ala Ile Gly Phe Ala Arg Arg Lys Pro Ala Lys Leu Phe Glu Ala Arg
 275 280 285
 Lys Ile Leu Lys Lys Leu Asn Leu Ser Gly Leu Asp Ser Met Pro Leu
 290 295 300
 Ile Gly Cys Leu Asp Leu Leu Leu Ala Asp Val Glu Gln Ser Ser Ala
 305 310 315 320
 Arg Phe Leu Ser Ser Ser Asp Glu Lys Leu Arg Asp Trp Leu Asn Asn
 325 330 335
 Tyr Pro Gly Glu Lys Leu Glu Ala Ile Cys Ile Phe Cys Lys Asn Trp
 340 345 350
 Leu Glu Asn Asp Val Leu Val Gly Tyr Arg Asp Ile Asp Leu Lys Glu
 355 360 365
 Ile Asp Leu Asp Ser Trp Phe Glu Asp Arg Glu Ile Gln Glu Phe Ile
 370 375 380
 Glu Gln Ile Glu Lys Lys Ser Asn Arg Thr Val Phe Lys Ser Gly Pro
 385 390 395 400
 Gln Asn Lys Pro Ile Phe Gln Ala Gln Glu Ser Leu Lys Asp Ser Ser
 405 410 415
 Thr Gly Pro Asp Leu Asn Ser Asp Asn Phe Glu Glu Gly Arg Leu Pro
 420 425 430
 Leu Pro Gly Gly Val Arg Glu Asp Gly Gln Glu Val Ile Glu Glu Asn
 435 440 445
 Ile Tyr Thr Asp Glu Ile Ile Lys Asn Lys Ser Ile Glu Phe Tyr Lys
 450 455 460
 Tyr Ala Ile Glu Lys Ile Ala Glu Leu Lys Phe Val Phe Gly Glu Ala
 465 470 475 480
 Leu Glu Asn Tyr Arg Ile Phe Asn Lys Ser Ser Tyr Leu Thr Tyr Leu
 485 490 495

Tyr Ala Phe Leu Ile Leu Phe Ala Phe Gly Leu Gly Val Gly Phe Val
500 505 510

Arg Asn Asn Leu Lys Lys Pro Val Gln Glu Lys Glu Ile Ile Asp Asn
515 520 525

Ser Leu Ser Ile Asn Glu Asn Lys Asn Val Phe Tyr Glu Gly Leu Asn
530 535 540

Gln Asp Asp Lys Lys Lys Val Leu Asp Asn Ser Lys Ile
545 550 555

<210> 118
<211> 524
<212> PRT
<213> *Protochlorococcus marinus* MT9313

<400> 118

Met Ala Ala Gln Leu Val Asp Leu Pro Ile Asp His Phe Arg Leu Leu
1 5 10 15

Gly Val Ser Pro Ser Ala Asp Ser Glu Ala Ile Leu Arg Ala Leu Glu
20 25 30

Leu Arg Leu Asp Arg Cys Pro Asp Gln Gly Phe Thr His Glu Val Leu
35 40 45

Ile Gln Arg Ala Glu Leu Leu Arg Leu Ser Ala Asp Leu Leu Thr Asp
50 55 60

Pro Pro Arg Arg Gln Ala Tyr Glu Thr Ala Leu Leu Glu Leu Ser Arg
65 70 75 80

Asp His Pro Gly Glu Thr Ala Gly Leu Asp Val Ser Pro Ser Arg Glu
85 90 95

Val Ala Gly Leu Ile Leu Leu Phe Glu Ala Asn Ser Ser His Glu Val
100 105 110

Phe His Leu Ala Ser Gln Gly Leu Gln Pro Pro Gln Ser Pro Thr Leu
115 120 125

Gly Ser Glu Arg Glu Ala Asp Leu Ala Leu Leu Leu Ala Leu Ala Cys
130 135 140

Arg	Ala	Ala	Ala	Ala	Glu	Glu	Gln	Glu	Gln	Arg	Arg	Tyr	Glu	Ala	Ala	145	150	155	160
Ala	Ser	Leu	Leu	His	Asp	Gly	Ile	Gln	Leu	Leu	Gln	Arg	Met	Gly	Lys	165	170	175	
Leu	Ser	Glu	Glu	Cys	His	Lys	Leu	Glu	Asn	Asp	Leu	Asp	Ala	Leu	Leu	180	185	190	
Pro	Tyr	Arg	Ile	Leu	Asp	Leu	Leu	Ser	Arg	Asp	Leu	Gly	Asp	Gln	Val	195	200	205	
Ser	His	Gln	Glu	Gly	Leu	Arg	Leu	Leu	Asp	Asn	Phe	Val	Ser	Gln	Arg	210	215	220	
Gly	Gly	Leu	Glu	Gly	Thr	Ala	Pro	Ser	Pro	Ala	Pro	Gly	Gly	Leu	Asp	225	230	235	240
Gln	Ser	Glu	Phe	Asp	Asn	Phe	Phe	Lys	Gln	Ile	Arg	Lys	Phe	Leu	Thr	245	250	255	
Val	Gln	Glu	Gln	Val	Asp	Leu	Phe	Leu	Arg	Trp	Gln	Gln	Ala	Gly	Ser	260	265	270	
Ala	Asp	Ala	Gly	Phe	Leu	Gly	Gly	Leu	Ala	Leu	Ala	Ala	Val	Gly	Phe	275	280	285	
Ser	Arg	Arg	Lys	Pro	Glu	Arg	Val	Gln	Glu	Ala	Arg	Gln	His	Leu	Glu	290	295	300	
Arg	Leu	Gln	Leu	Asp	Gly	Cys	Asp	Pro	Leu	Pro	Met	Leu	Gly	Cys	Leu	305	310	315	320
Asp	Leu	Leu	Leu	Gly	Asp	Val	Gly	Arg	Ala	Gln	Glu	Arg	Phe	Leu	Arg	325	330	335	
Ser	Thr	Asp	Pro	Arg	Val	Lys	Asp	Cys	Leu	Asn	Ser	His	Pro	Gly	Asp	340	345	350	
Glu	Leu	Ala	Ala	Phe	Cys	Glu	Tyr	Cys	Arg	Ser	Trp	Leu	Arg	Gly	Asp	355	360	365	

Val Leu Pro Gly Tyr Arg Asp Val Asp Ala Glu Ala Val Asp Leu Glu
 370 375 380

Ala Trp Phe Ala Asp Arg Asp Val Gln Ala Tyr Val Glu Arg Leu Glu
 385 390 395 400

Arg Ser Glu Asn Arg Ala Ser Ser Leu Gly Lys Ala Phe Ser Gly Ser
 405 410 415

Ser Val Lys Gln Pro Phe Pro Trp Ala Pro Leu Asp Pro Asp Gly Ile
 420 425 430

Leu Pro Leu Ser Leu Gly Gly Pro Asp Val Gly Gln Pro Ala Ala Asp
 435 440 445

Gln Ser Ser Asp Glu Phe Ala Ser Asp Gly Met Ala Trp Ile Asp Arg
 450 455 460

Leu Ala Asp Leu Pro Arg Pro Thr Arg Pro Val Leu Ile Gly Ser Val
 465 470 475 480

Val Phe Ala Ala Leu Ile Ala Ala Phe Ala Gly Phe Ser Leu Phe Gly
 485 490 495

Gln Arg Pro Arg Thr Ser Val Ser Thr Ala Ala Asp Gln Pro Gln Val
 500 505 510

Thr Ala Pro Pro Thr Ala Thr Leu Gln Glu Glu Val
 515 520

<210> 119
 <211> 566
 <212> PRT
 <213> Synechocystis PCC6803

<400> 119

Met Phe Ile Pro Leu Asp Phe Tyr Arg Ile Leu Gly Ile Pro Pro Gln
 1 5 10 15

Ser Gly Gly Glu Thr Ile Glu Gln Ala Tyr Gln Asp Arg Leu Leu Gln
 20 25 30

Leu Pro Arg Arg Glu Phe Ser Asp Ala Ala Val Thr Leu Arg Asn Gln
 35 40 45

Leu Leu Ala Ile Ala Tyr Glu Thr Leu Arg Asp Pro Glu Lys Arg Gln
 50 55 60

Ala Tyr Asp Gln Glu Trp Trp Gly Ala Met Asp Glu Ala Leu Gly Glu
 65 70 75 80

Ala Leu Pro Leu Thr Thr Pro Glu Leu Glu Cys Ser Pro Glu Gln Glu
 85 90 95

Ile Gly Ala Leu Leu Ile Leu Leu Asp Leu Gly Glu Tyr Glu Leu Val
 100 105 110

Val Lys Tyr Gly Glu Pro Val Leu His Asp Pro Asn Pro Pro Ala Gly
 115 120 125

Gly Leu Pro Gln Asp Tyr Leu Leu Ser Val Ile Leu Ala His Trp Glu
 130 135 140

Leu Ser Arg Glu Arg Trp Gln Gln Gln Gln Tyr Glu Phe Ala Ala Thr
 145 150 155 160

Ala Ser Leu Lys Ala Leu Ala Arg Leu Gln Gln Asp Asn Asp Phe Pro
 165 170 175

Ala Leu Glu Ala Glu Ile Arg Gln Glu Leu Tyr Arg Leu Arg Pro Tyr
 180 185 190

Arg Ile Leu Glu Leu Leu Ala Lys Glu Gly Gln Gly Glu Glu Gln Arg
 195 200 205

Gln Gln Gly Leu Ala Leu Leu Gln Ala Met Val Gln Asp Arg Gly Gly
 210 215 220

Ile Glu Gly Lys Gly Glu Asp Tyr Ser Gly Leu Gly Asn Asp Asp Phe
 225 230 235 240

Leu Lys Phe Ile His Gln Leu Arg Cys His Leu Thr Val Ala Glu Gln
 245 250 255

Asn Ala Leu Phe Leu Pro Glu Ser Gln Arg Pro Ser Leu Val Ala Ser
 260 265 270

Tyr Leu Ala Val His Ser Leu Met Ala Glu Gly Val Lys Glu Gln Asp
 275 280 285

Pro Met Ala Ile Val Glu Ala Lys Ser Leu Ile Ile Gln Leu Glu Asn
 290 295 300
 Cys Gln Asp Leu Ala Leu Glu Lys Val Ile Cys Glu Leu Leu Leu Gly
 305 310 315 320
 Gln Thr Glu Val Val Leu Ala Ala Ile Asp Gln Gly Asp Pro Lys Ile
 325 330 335
 Val Ala Gly Leu Glu Ser Lys Leu Ala Thr Gly Glu Asp Pro Leu Thr
 340 345 350
 Ala Phe Tyr Thr Phe Thr Glu Gln Trp Leu Glu Glu Glu Ile Val Pro
 355 360 365
 Tyr Phe Arg Asp Leu Ser Pro Glu Thr Leu Ser Pro Lys Ala Tyr Phe
 370 375 380
 Asn Asn Pro Ser Val Gln Gln Tyr Leu Glu Gln Leu Glu Pro Asp Ser
 385 390 395 400
 Phe Thr Thr Asp Asn Ser Phe Ala Ser Pro Ala Leu Leu Ser Thr Ala
 405 410 415
 Thr Glu Ser Glu Thr Pro Met Val His Ser Ser Ala Ala Leu Pro Asp
 420 425 430
 Arg Pro Leu Thr Ser Thr Val Pro Ser Arg Arg Gly Arg Ser Pro Arg
 435 440 445
 Arg Ser Arg Asp Asp Val Phe Pro Ser Ala Asp Asn Ser Ser Gly Leu
 450 455 460
 Ala Val Thr Thr Leu Ser Pro Ala Ile Ala Tyr Asp Thr His Ser Leu
 465 470 475 480
 Gly Thr Asn Gly Ile Gly Gly Asp Ser Thr Ser Asn Gly Phe Ser Ser
 485 490 495
 Asn Ser Ala Pro Glu Ser Thr Ser Lys His Lys Ser Pro Arg Arg Arg
 500 505 510

Lys Lys Arg Val Thr Ile Lys Pro Val Arg Phe Gly Ile Phe Leu Leu
515 520 525

Cys Leu Ala Gly Ile Val Gly Gly Ala Thr Ala Leu Ile Ile Asn Arg
530 535 540

Thr Gly Asp Pro Leu Gly Gly Leu Leu Glu Asp Pro Leu Asp Val Phe
545 550 555 560

Leu Asp Gln Pro Ser Glu
565

<210> 120
<211> 573
<212> PRT
<213> Synechococcus PCC7002

<400> 120

Thr Val Arg Ile Pro Leu Asp Tyr Tyr Arg Ile Leu Cys Val Pro Ala
1 5 10 15

Lys Ala Thr Thr Ala Gln Ile Thr Gln Ala Tyr Arg Asp Arg Leu Ser
20 25 30

Gln Phe Pro Arg Arg Glu His Asn Ala Leu Ala Ile Glu Ala Arg Asn
35 40 45

Arg Ile Ile Glu Gln Ala Phe Glu Val Leu Ser Gln Thr Glu Thr Arg
50 55 60

Ala Val Tyr Asp His Glu Leu Ser Gly Asn Met Phe Arg Ser Leu Val
65 70 75 80

Pro Ser Arg Pro Lys Leu Pro Phe Pro Asp Arg Pro Ser Ser Asp Thr
85 90 95

Glu Leu Glu Ala Leu Thr Ala His Gln Pro Thr Ile Asp Ile Ala Glu
100 105 110

Lys Asp Leu Leu Gly Gly Leu Leu Leu Leu Asp Leu Gly Glu Tyr
115 120 125

Glu Leu Val Leu Lys Trp Ala Ala Pro Tyr Leu Lys Gly Lys Gly Lys
130 135 140

Leu Val Lys Glu Gly Lys Phe Gly Ala Val Glu Ile Val Glu Gln Glu	145	150	155	160
Leu Arg Leu Cys Leu Ala Leu Ala His Trp Glu Leu Ser Arg Glu Gln	165	170	175	
Trp Leu Gln Gln His Tyr Glu Gln Ala Ala Leu Ser Gly Gln Lys Ser	180	185	190	
Gln Glu Leu Leu Val Asp Val Ala Gln Phe Ala Asp Leu Gln Gln Glu	195	200	205	
Ile Gln Gly Asp Leu Asn Arg Leu Arg Pro Tyr Gln Val Leu Glu Leu	210	215	220	
Leu Ala Leu Pro Glu Ser Glu Thr Gln Glu Arg Gln Arg Gly Leu Gln	225	230	235	240
Leu Leu Gln Glu Met Leu Ser Ala Arg Val Gly Ile Asp Gly Gln Gly	245	250	255	
Asp Asp Gln Ser Gly Leu Ser Ile Asp Asp Phe Leu Arg Phe Ile Gln	260	265	270	
Gln Leu Arg Ser Tyr Leu Thr Val Gln Glu Gln Leu Asp Leu Phe Val	275	280	285	
Ala Glu Ser Lys Arg Pro Ser Ala Ala Ala Ala Tyr Leu Ala Val Tyr	290	295	300	
Ala Leu Leu Ala Ala Gly Phe Ser Gln Arg Lys Pro Asp Leu Val Val	305	310	315	320
Gln Ala Gln Thr Leu Leu Lys Arg Leu Gly Lys Arg Gln Asp Val Phe	325	330	335	
Leu Glu Gln Ser Ile Cys Ala Leu Leu Leu Gly Gln Pro Ser Glu Ala	340	345	350	
Asn Gln Leu Leu Glu Gln Ser Gln Glu Gln Glu Ala Ile Ala Tyr Ile	355	360	365	
Gln Glu Gln Ser Glu Gly Ala Pro Asp Leu Leu Pro Gly Leu Cys Leu	370	375	380	

Tyr Gly Glu Gln Trp Leu Lys Thr Glu Val Phe Ser His Phe Arg Asp
 385 390 395 400

Leu Arg Gln Arg Leu Glu Asp Gly Ser Val Ser Leu Thr Ala Tyr Phe
 405 410 415

Ala Asp Pro Glu Val Gln Gln Tyr Leu Asp Asp Leu Leu Thr Glu Ala
 420 425 430

Val Pro Thr Pro Thr Pro His Pro Asp Thr Glu Ser Thr Ala Ala Pro
 435 440 445

Ser Glu Lys Pro Pro Glu Thr Leu Gln Ser Glu Thr Gly Val Ser Pro
 450 455 460

His Pro Ser Arg Pro Ala Lys Val Asp Ser Phe Glu Asp Leu Val Thr
 465 470 475 480

Gln Thr Pro Ala Thr Val Pro Pro Ala Pro Pro Ser Pro Gly Val Ala
 485 490 495

Pro Val Thr Ala Ala Leu Asn Pro Asp Pro Glu Ala Ser Ser Ala Ser
 500 505 510

Ser Lys Ser Val Ser Ser Lys Lys Ser Ile Gly Pro Trp Gly Ala Ile
 515 520 525

Ala Ala Ile Val Gly Ser Val Leu Leu Val Val Gly Leu Val Arg Ile
 530 535 540

Leu Ser Gly Leu Thr Thr Gln Glu Pro Leu Gln Val Thr Leu Asn Gly
 545 550 555 560

Glu Pro Pro Leu Thr Ile Pro Ser Leu Asp Thr Ala Glu
 565 570

<210> 121
 <211> 515
 <212> PRT
 <213> Synechococcus WH8102

<400> 121

Gly Asp Leu Trp Thr Leu Asp Leu Pro Ile Asp His Phe Arg Leu Leu
 1 5 10 15

Gly Val Ser Pro Ser Ala Asp Pro Ala Ser Ile Leu Arg Arg Leu Gln
 20 25 30

Thr Arg Ser Asp Ser Pro Pro Asp Asp Gly Phe Thr His Glu Gly Leu
 35 40 45

Leu Gln Arg Gln Ala Leu Leu His Arg Ser Ala Asp Leu Leu Thr Asp
 50 55 60

Pro Ser Glu Arg Ala Asp Tyr Glu Ala Ala Leu Leu Ser Leu Ser Ala
 65 70 75 80

Thr His Pro Asn Glu Thr Val Gly Leu Asp Leu Ala Ala Ser Ser Glu
 85 90 95

Val Ala Gly Leu Ile Leu Leu Trp Glu Ala Gly Ala Ala Leu Glu Ala
 100 105 110

Phe Gln Leu Ala Arg Gln Gly Leu Gln Pro Pro Gln Ala Pro Ala Leu
 115 120 125

Gly Ser Gly Arg Glu Ala Asp Leu Thr Leu Leu Ala Ala Leu Ala Cys
 130 135 140

Arg Asp Ala Ala Arg Asp Glu Gln Gln Gln Arg Arg Tyr Glu Ser Ala
 145 150 155 160

Ala Gln Leu Leu Arg Asp Gly Ile Glu Leu Gln Gln Arg Met Gly Lys
 165 170 175

Leu Pro Asp Gln Gln Ala Arg Leu Gln Gln Glu Leu Asp Asp Leu Leu
 180 185 190

Pro Tyr Arg Val Leu Asp Leu Leu Ser Arg Asp Leu Ser Asp Ala Asp
 195 200 205

Ala	Arg	Gln	Gln	Gly	Ile	Ser	Leu	Leu	Asp	Gln	Leu	Val	Arg	Asp	Arg	210	215	220	
Gly	Gly	Leu	Asp	Pro	Glu	Gly	Leu	Asp	Ser	Glu	Thr	Pro	Ala	Ala	Met	225	230	235	240
Gly	Gln	Ala	Asp	Phe	Glu	Ser	Phe	Phe	Gln	Gln	Ile	Arg	Arg	Phe	Leu	245	250	255	
Thr	Val	Gln	Glu	Gln	Val	Asp	Leu	Phe	Arg	Gly	Trp	Phe	Ala	Glu	Gly	260	265	270	
Ser	Ile	Glu	Ala	Gly	Cys	Leu	Ala	Val	Phe	Ala	Leu	Ala	Ala	Ala	Gly	275	280	285	
Tyr	Ser	Arg	Arg	Lys	Pro	Glu	Phe	Leu	Glu	Gln	Ala	Arg	Glu	Gln	Leu	290	295	300	
Gln	Arg	Leu	Val	Ala	Ser	Asp	Leu	Asp	Pro	Met	Pro	Leu	Leu	Gly	Cys	305	310	315	320
Leu	Asp	Leu	Leu	Leu	Gly	Asn	Val	Ala	Glu	Ala	Ser	Leu	His	Phe	Ser	325	330	335	
Ala	Ile	Arg	Asp	Glu	Glu	Leu	Leu	Ser	Trp	Leu	Ala	Glu	His	Pro	Gly	340	345	350	
Asp	His	Leu	Ala	Ala	Gln	Cys	Glu	Tyr	Cys	Arg	Val	Trp	Leu	Glu	Arg	355	360	365	
Asp	Val	Leu	Pro	Gly	Tyr	Arg	Asp	Val	Asp	Ala	Ala	Gly	Val	Asp	Leu	370	375	380	
Asp	Ala	Trp	Phe	Ala	Asp	Arg	Asp	Val	Gln	Ala	Tyr	Val	Asp	Arg	Ile	385	390	395	400
Asp	Arg	Gln	Ser	Ala	Arg	Leu	Gly	Ser	Ala	Ala	Thr	Val	Thr	Gly	Ala	405	410	415	

Gly Leu Ser Ser Ala Pro Ser Ala Asp Ala Ser Ser Pro His Glu Ala
420 425 430

Ala Leu Asp Asp Asp His Leu Pro Ala Glu Glu Ala Pro Ser Ser Asp
435 440 445

Pro Ala Asn Gln Arg Leu Ser Asn Arg Leu Arg Trp Leu Ala Ala Ser
450 455 460

Leu Val Val Gly Leu Val Ala Ala Leu Ala Ala Ala Val Met Leu Arg
465 470 475 480

Pro Arg Glu Thr Ala Pro Val Val Leu Gln Pro Glu Pro Asp Arg Gln
485 490 495

Asp Ala Val Glu Pro Lys Pro Ser Ala Gln Asp Ser Ala Thr Leu Lys
500 505 510

Pro Gln Ala
515

<210> 122
<211> 525
<212> PRT
<213> Oryza sativa

<400> 122

Ala Ala Glu Arg Ser Leu Pro Leu Gln Val Asp Phe Tyr Lys Val Leu
1 5 10 15

Gly Ala Glu Pro His Phe Leu Gly Asp Gly Ile Arg Arg Ala Phe Glu
20 25 30

Ala Arg Ile Ala Lys Pro Pro Gln Tyr Gly Tyr Ser Thr Asp Ala Leu
35 40 45

Val Gly Arg Arg Gln Met Leu Gln Ile Ala His Asp Thr Leu Met Asn
50 55 60

Gln Asn Ser Arg Thr Gln Tyr Asp Arg Ala Leu Ser Glu Asn Arg Glu
65 70 75 80

Glu Ala Leu Thr Met Asp Ile Ala Trp Asp Lys Glu Ala Gly Glu Ala
85 90 95

Leu	Ala	Val	Leu	Val	Thr	Gly	Glu	Gln	Leu	Leu	Leu	Asp	Arg	Pro	Pro
			100					105					110		
Lys	Arg	Phe	Lys	Gln	Asp	Val	Val	Leu	Ala	Met	Ala	Leu	Ala	Tyr	Val
		115					120					125			
Asp	Leu	Ser	Arg	Asp	Ala	Met	Ala	Ala	Ser	Pro	Pro	Asp	Val	Ile	Gly
	130					135					140				
Cys	Cys	Glu	Val	Leu	Glu	Arg	Ala	Leu	Lys	Leu	Leu	Gln	Glu	Asp	Gly
145					150					155					160
Ala	Ser	Asn	Leu	Ala	Pro	Asp	Leu	Leu	Ser	Gln	Ile	Asp	Glu	Thr	Leu
				165					170					175	
Glu	Glu	Ile	Thr	Pro	Arg	Cys	Val	Leu	Glu	Leu	Leu	Ser	Leu	Pro	Ile
			180					185					190		
Asp	Thr	Glu	His	His	Lys	Lys	Arg	Gln	Glu	Gly	Leu	Gln	Gly	Ala	Arg
		195					200					205			
Asn	Ile	Leu	Trp	Ser	Val	Gly	Arg	Gly	Gly	Ile	Ala	Thr	Val	Gly	Gly
	210					215					220				
Gly	Phe	Ser	Arg	Glu	Ala	Phe	Met	Asn	Glu	Ala	Phe	Leu	Arg	Met	Thr
225					230					235					240
Ser	Ile	Glu	Gln	Met	Asp	Phe	Phe	Ser	Lys	Thr	Pro	Asn	Ser	Ile	Pro
				245					250					255	
Pro	Glu	Trp	Phe	Glu	Ile	Tyr	Asn	Val	Ala	Leu	Ala	His	Val	Ala	Gln
			260					265					270		
Ala	Ile	Ile	Ser	Lys	Arg	Pro	Gln	Phe	Ile	Met	Met	Ala	Asp	Asp	Leu
		275					280					285			
Phe	Glu	Gln	Leu	Gln	Lys	Phe	Asn	Ile	Gly	Ser	His	Tyr	Ala	Tyr	Asp
	290					295					300				

Asn Glu Met Asp Leu Ala Leu Glu Arg Ala Phe Cys Ser Leu Leu Val
 305 310 315 320

Gly Asp Val Ser Lys Cys Arg Met Trp Leu Gly Ile Asp Asn Glu Ser
 325 330 335

Ser Pro Tyr Arg Asp Pro Lys Ile Leu Glu Phe Ile Val Thr Asn Ser
 340 345 350

Ser Ile Ser Glu Glu Asn Asp Leu Leu Pro Gly Leu Cys Lys Leu Leu
 355 360 365

Glu Thr Trp Leu Ile Phe Glu Val Phe Pro Arg Ser Arg Asp Thr Arg
 370 375 380

Gly Met Gln Phe Arg Leu Gly Asp Tyr Tyr Asp Asp Pro Glu Val Leu
 385 390 395 400

Ser Tyr Leu Glu Arg Met Glu Gly Gly Gly Ala Ser His Leu Ala Ala
 405 410 415

Ala Ala Ala Ile Ala Lys Leu Gly Ala Gln Ala Thr Ala Ala Leu Gly
 420 425 430

Thr Val Lys Ser Asn Ala Ile Gln Ala Phe Asn Lys Val Phe Pro Leu
 435 440 445

Ile Glu Gln Leu Asp Arg Ser Ala Met Glu Asn Thr Lys Asp Gly Pro
 450 455 460

Gly Gly Tyr Leu Glu Asn Phe Asp Gln Glu Asn Ala Pro Ala His Asp
 465 470 475 480

Ser Arg Asn Ala Ala Leu Lys Ile Ile Ser Ala Gly Ala Leu Phe Ala
 485 490 495

Leu Leu Ala Val Ile Gly Ala Lys Tyr Leu Pro Arg Lys Arg Pro Leu
 500 505 510

Ser Ala Ile Arg Ser Glu His Gly Ser Val Ala Val Ala
 515 520 525

<210> 123

<211> 578
 <212> PRT
 <213> Arabidopsis thaliana

<400> 123

Arg Pro Glu Arg His Val Pro Ile Pro Ile Asp Phe Tyr Gln Val Leu
 1 5 10 15

Gly Ala Gln Thr His Phe Leu Thr Asp Gly Ile Arg Arg Ala Phe Glu
 20 25 30

Ala Arg Val Ser Lys Pro Pro Gln Phe Gly Phe Ser Asp Asp Ala Leu
 35 40 45

Ile Ser Arg Arg Gln Ile Leu Gln Ala Ala Cys Glu Thr Leu Ser Asn
 50 55 60

Pro Arg Ser Arg Arg Glu Tyr Asn Glu Gly Leu Leu Asp Asp Glu Glu
 65 70 75 80

Ala Thr Val Ile Thr Asp Val Pro Trp Asp Lys Val Pro Gly Ala Leu
 85 90 95

Cys Val Leu Gln Glu Gly Gly Glu Thr Glu Ile Val Leu Arg Val Gly
 100 105 110

Glu Ala Leu Leu Lys Glu Arg Leu Pro Lys Ser Phe Lys Gln Asp Val
 115 120 125

Val Leu Val Met Ala Leu Ala Phe Leu Asp Val Ser Arg Asp Ala Met
 130 135 140

Ala Leu Asp Pro Pro Asp Phe Ile Thr Gly Tyr Glu Phe Val Glu Glu
 145 150 155 160

Ala Leu Lys Leu Leu Gln Glu Glu Gly Ala Ser Ser Leu Ala Pro Asp
 165 170 175

Leu Arg Ala Gln Ile Asp Glu Thr Leu Glu Glu Ile Thr Pro Arg Tyr
 180 185 190

Val Leu Glu Leu Leu Gly Leu Pro Leu Gly Asp Asp Tyr Ala Ala Lys
 195 200 205

Arg	Leu	Asn	Gly	Leu	Ser	Gly	Val	Arg	Asn	Ile	Leu	Trp	Ser	Val	Gly	210	215	220	
Gly	Gly	Gly	Ala	Ser	Ala	Leu	Val	Gly	Gly	Leu	Thr	Arg	Glu	Lys	Phe	225	230	235	240
Met	Asn	Glu	Ala	Phe	Leu	Arg	Met	Thr	Ala	Ala	Glu	Gln	Val	Asp	Leu	245	250	255	
Phe	Val	Ala	Thr	Pro	Ser	Asn	Ile	Pro	Ala	Glu	Ser	Phe	Glu	Val	Tyr	260	265	270	
Glu	Val	Ala	Leu	Ala	Leu	Val	Ala	Gln	Ala	Phe	Ile	Gly	Lys	Lys	Pro	275	280	285	
His	Leu	Leu	Gln	Asp	Ala	Asp	Lys	Gln	Phe	Gln	Gln	Leu	Gln	Gln	Ala	290	295	300	
Lys	Val	Met	Ala	Met	Glu	Ile	Pro	Ala	Met	Leu	Tyr	Asp	Thr	Arg	Asn	305	310	315	320
Asn	Trp	Glu	Ile	Asp	Phe	Gly	Leu	Glu	Arg	Gly	Leu	Cys	Ala	Leu	Leu	325	330	335	
Ile	Gly	Lys	Val	Asp	Glu	Cys	Arg	Met	Trp	Leu	Gly	Leu	Asp	Ser	Glu	340	345	350	
Asp	Ser	Gln	Tyr	Arg	Asn	Pro	Ala	Ile	Val	Glu	Phe	Val	Leu	Glu	Asn	355	360	365	
Ser	Asn	Arg	Asp	Asp	Asn	Asp	Asp	Leu	Pro	Gly	Leu	Cys	Lys	Leu	Leu	370	375	380	
Glu	Thr	Trp	Leu	Ala	Gly	Val	Val	Phe	Pro	Arg	Phe	Arg	Asp	Thr	Lys	385	390	395	400
Asp	Lys	Lys	Phe	Lys	Leu	Gly	Asp	Tyr	Tyr	Asp	Asp	Pro	Met	Val	Leu	405	410	415	
Ser	Tyr	Leu	Glu	Arg	Val	Glu	Val	Val	Gln	Gly	Ser	Pro	Leu	Ala	Ala	420	425	430	
Ala	Ala	Ala	Met	Ala	Arg	Ile	Gly	Ala	Glu	His	Val	Lys	Ala	Ser	Ala	435	440	445	

Met Gln Ala Leu Gln Lys Val Phe Pro Ser Arg Tyr Thr Asp Arg Asn
 450 455 460

Ser Ala Glu Pro Lys Asp Val Gln Glu Thr Val Phe Ser Val Asp Pro
 465 470 475 480

Val Gly Asn Asn Val Gly Arg Asp Gly Glu Pro Gly Val Phe Ile Ala
 485 490 495

Glu Ala Val Arg Pro Ser Glu Asn Phe Glu Thr Asn Asp Tyr Ala Ile
 500 505 510

Arg Ala Gly Val Ser Glu Ser Ser Val Asp Glu Thr Thr Val Glu Met
 515 520 525

Ser Val Ala Asp Met Leu Lys Glu Ala Ser Val Lys Ile Leu Ala Ala
 530 535 540

Gly Val Ala Ile Gly Leu Ile Ser Leu Phe Ser Gln Lys Tyr Phe Leu
 545 550 555 560

Lys Ser Ser Ser Ser Phe Gln Arg Lys Asp Met Val Ser Ser Met Glu
 565 570 575

Ser Asp

<210> 124
 <211> 99
 <212> PRT
 <213> Solanum tuberosum

<400> 124

Pro Ser Asp His His Ile Ser Met Pro Ile Asp Phe Tyr Arg Val Leu
 1 5 10 15

Gly Ala Glu Ala His Phe Leu Gly Asp Gly Ile Arg Arg Cys Tyr Asp
 20 25 30

Ala Arg Ile Thr Lys Pro Pro Gln Tyr Gly Tyr Ser Gln Glu Ala Leu
 35 40 45

Ile Gly Arg Arg Gln Ile Leu Gln Ala Ala Cys Glu Thr Leu Ala Asp
 50 55 60

Ser Thr Ser Arg Arg Glu Tyr Asn Gln Gly Leu Ala Gln His Glu Phe
65 70 75 80

Asp Thr Ile Leu Thr Pro Val Pro Trp Asp Lys Val Pro Gly Ala Met
85 90 95

Cys Val Leu

<210> 125
<211> 760
<212> PRT
<213> Oryza sativa

<400> 125

Met Glu Gly Phe His Asn Leu Leu Ala Arg Pro Asn Ser Ala Pro Phe
1 5 10 15

Ala Phe Ser Leu Pro Arg Pro Arg Pro Arg Pro Arg Arg Arg Pro Pro
20 25 30

Pro His Pro Ser Ala Ala Cys Arg Ala Ala Ser Arg Trp Ala Glu Arg
35 40 45

Leu Phe Ala Asp Phe His Leu Leu Pro Thr Ala Ala Pro Ser Asp Pro
50 55 60

Pro Ser Pro Ala Pro Ala Pro Ala Ala Ala Pro Ser Ala Ser Pro Phe
65 70 75 80

Val Pro Leu Phe Pro Asp Ala Ala Glu Arg Ser Leu Pro Leu Gln Val
85 90 95

Asp Phe Tyr Lys Val Leu Gly Ala Glu Pro His Phe Leu Gly Asp Gly
100 105 110

Ile Arg Arg Ala Phe Glu Ala Arg Ile Ala Lys Pro Pro Gln Tyr Gly
115 120 125

Tyr Ser Thr Asp Ala Leu Val Gly Arg Arg Gln Met Leu Gln Ile Ala
130 135 140

His Asp Thr Leu Met Asn Gln Asn Ser Arg Thr Gln Tyr Asp Arg Ala
145 150 155 160

Leu Ser Glu Asn Arg Glu Glu Ala Leu Thr Met Asp Ile Ala Trp Asp
 165 170 175

Lys Glu Ala Gly Glu Ala Leu Ala Val Leu Val Thr Gly Glu Gln Leu
 180 185 190

Leu Leu Asp Arg Pro Pro Lys Arg Phe Lys Gln Asp Val Val Leu Ala
 195 200 205

Met Ala Leu Ala Tyr Val Asp Leu Ser Arg Asp Ala Met Ala Ala Ser
 210 215 220

Pro Pro Asp Val Ile Gly Cys Cys Glu Val Leu Glu Arg Ala Leu Lys
 225 230 235 240

Leu Leu Gln Glu Asp Gly Ala Ser Asn Leu Ala Pro Asp Leu Leu Ser
 245 250 255

Gln Ile Asp Glu Thr Leu Glu Glu Ile Thr Pro Arg Cys Val Leu Glu
 260 265 270

Leu Leu Ser Leu Pro Ile Asp Thr Glu His His Lys Lys Arg Gln Glu
 275 280 285

Gly Leu Gln Gly Ala Arg Asn Ile Leu Trp Ser Val Gly Arg Gly Gly
 290 295 300

Ile Ala Thr Val Gly Gly Gly Phe Ser Arg Glu Ala Phe Met Asn Glu
 305 310 315 320

Ala Phe Leu Arg Met Thr Ser Ile Glu Gln Met Asp Phe Phe Ser Lys
 325 330 335

Thr Pro Asn Ser Ile Pro Pro Glu Trp Phe Glu Ile Tyr Asn Val Ala
 340 345 350

Leu Ala His Val Ala Gln Ala Ile Ile Ser Lys Arg Pro Gln Phe Ile
 355 360 365

Met Met Ala Asp Asp Leu Phe Glu Gln Leu Gln Lys Phe Asn Ile Gly
 370 375 380

Ser His Tyr Ala Tyr Asp Asn Glu Met Asp Leu Ala Leu Glu Arg Ala
 385 390 395 400
 Phe Cys Ser Leu Leu Val Gly Asp Val Ser Lys Cys Arg Met Trp Leu
 405 410 415
 Gly Ile Asp Asn Glu Ser Ser Pro Tyr Arg Asp Pro Lys Ile Leu Glu
 420 425 430
 Phe Ile Val Thr Asn Ser Ser Ile Ser Glu Glu Asn Asp Leu Leu Pro
 435 440 445
 Gly Leu Cys Lys Leu Leu Glu Thr Trp Leu Ile Phe Glu Val Phe Pro
 450 455 460
 Arg Ser Arg Asp Thr Arg Gly Met Gln Phe Arg Leu Gly Asp Tyr Tyr
 465 470 475 480
 Asp Asp Pro Glu Val Leu Ser Tyr Leu Glu Arg Met Glu Gly Gly Gly
 485 490 495
 Ala Ser His Leu Ala Ala Ala Ala Ala Ile Ala Lys Leu Gly Ala Gln
 500 505 510
 Ala Thr Ala Ala Leu Gly Thr Val Lys Ser Asn Ala Ile Gln Ala Phe
 515 520 525
 Asn Lys Val Phe Pro Leu Ile Glu Gln Leu Asp Arg Ser Ala Met Glu
 530 535 540
 Asn Thr Lys Asp Gly Pro Gly Gly Tyr Leu Glu Asn Phe Asp Gln Glu
 545 550 555 560
 Asn Ala Pro Ala His Asp Ser Arg Asn Ala Ala Leu Lys Ile Ile Ser
 565 570 575
 Ala Gly Ala Leu Phe Ala Leu Leu Ala Val Ile Gly Ala Lys Tyr Leu
 580 585 590
 Pro Arg Lys Arg Pro Leu Ser Ala Ile Arg Ser Glu His Gly Ser Val
 595 600 605
 Ala Val Ala Asn Ser Val Asp Ser Thr Asp Asp Pro Ala Leu Asp Glu
 610 615 620

Asp Pro Val His Ile Pro Arg Met Asp Ala Lys Leu Ala Glu Asp Ile
625 630 635 640

Val Arg Lys Trp Gln Ser Ile Lys Ser Lys Ala Leu Gly Pro Glu His
645 650 655

Ser Val Ala Ser Leu Gln Glu Val Leu Asp Gly Asn Met Leu Lys Val
660 665 670

Trp Thr Asp Arg Ala Ala Glu Ile Glu Arg His Gly Trp Phe Trp Glu
675 680 685

Tyr Thr Leu Ser Asp Val Thr Ile Asp Ser Ile Thr Ile Ser Leu Asp
690 695 700

Gly Arg Arg Ala Thr Val Glu Ala Thr Ile Asp Glu Ala Gly Gln Leu
705 710 715 720

Thr Asp Val Thr Glu Pro Arg Asn Asn Asp Ser Tyr Asp Thr Lys Tyr
725 730 735

Thr Thr Arg Tyr Glu Met Ala Phe Ser Lys Leu Gly Gly Trp Lys Ile
740 745 750

Thr Glu Gly Ala Val Leu Lys Ser
755 760

<210> 126
<211> 2283
<212> DNA
<213> Oryza sativa

<400> 126
atggaggggt tccacaacct cctcgccgcg cccaactcgg cgccattcgc cttctccctc 60
cctcgccgcg gcccgcgccc gcgcgcgagg ccgcgcctc acccctcgc tgctgcccgc 120
gccgcgagcc gctgggcccga acgcctcttc gccgacttcc acctcctccc caccgcccgcg 180
ccctccgacc cgccgtcccc ggccccggcc ccggccgcgc cgccctcgc ctcctccctc 240
gtcccgtctt tccccgacgc cgccgaacgc tccctcccgc tccaagtoga tttctacaag 300
gttctagggg cagagccaca tttccttggc gatggcatca ggagggcgtt cgaggcacgg 360
atagccaagc caccgcagta tggctacagc acggatgctc ttgttggtcg tcgacaaatg 420
ctgcagattg cccatgacac tctcatgaac cagaactccc gcaactcagta tgatcgtgcg 480

ctttctgaga accgtgaaga agctctcacc atggatattg cttgggacaa ggaggctggg	540
gaggcacttg ctgtgcttgt aactggagaa cagttgcttc tggatcggcc acccaagcgc	600
ttcaagcagg acgtggtgct agcgatggct ctggcttatg tggatctatc aagggatgct	660
atggcagcaa gccctccaga tgtaattggc tgctgcgagg tgctcgagag ggctctcaag	720
ctcttgccagg aagatggagc aagcaatctc gcacctgacg tgccttcaca gattgatgaa	780
actctcgagg agattacacc tcgctgtgta ttggagcttc tctcccttcc tattgacaca	840
gagcatcata agaagcgcca agaagggtct caaggtgcga gaaacatttt gtggagcgtt	900
ggcagaggag gtattgctac cgttggagga ggattttctc gtgaagcctt catgaacgag	960
gcttttttga ggatgacatc aattgaacag atggatttct tttcaaaaac accgaatagc	1020
attcctcctg aatggtttga aatttacaat gtagcacttg cacatgtcgc tcaagcaatt	1080
ataagtaaaa ggccacaatt catcatgatg gcggatgacg tttttgaaca actccagaag	1140
ttcaacatag gttctcatta tgcttatgat aatgagatgg accttgcaatt ggaaagggca	1200
ttctgctcat tgctagtcgg agatgttagc aagtgcagaa tgtggcttgg aattgataat	1260
gagtcttcac catacagaga ccccaaaatt ctagagttta ttgtgaccaa ctctagcatc	1320
agtgaagaga atgatcttct tccagggtcg tgcaagcttt tggagacttg gcttatcttt	1380
gaggtttttc ctaggagcag agatactcgg ggcatgcagt tcagacttgg agattactac	1440
gatgatccag aagttttaag ctacctagaa aggatggagg gtggtggtgc ttctcatttg	1500
gctgctgctg ctgctattgc aaaacttggg gctcaagcta cagctgcact tggtagctg	1560
aaatcaaagc ctattcaagc gttcaacaag gtttttccat tgatagaaca gtttagacagg	1620
tcagccatgg aaaatactaa agatggccct gggggatata ttgaaaattt tgaccaggaa	1680
aatgcacctg ctcatgattc gagaaatgcc gccttgaaga ttatctctgc tggcgactg	1740
tttgcaactg tggcagtaat tggggccaaa tatttgctc gtaagaggcc cctttctgct	1800
attaggagtg agcatggatc tgtggcagtt gctaatagtg tcgactctac tgatgatcct	1860
gcactagatg aagatccagt acatattcct agaatggatg cgaagctggc agaagatatt	1920
gttcgcaagt ggcagagtat caaatctaag gccttgggac cagaacattc gggtgcatca	1980
ttgcaagagg ttcttgatgg caacatgcta aagggtgtgga ctgaccgagc agcggagatt	2040
gagcgtcatg ggtggttctg ggagtataca ctatccgatg tgacgattga tagcatcact	2100
atctccctag atggtcgacg agcgactgtg gaggtacga ttgatgaggc aggccaaactt	2160

actgatgtta ctgagcccag aaacaatgat tcatatgaca caaaatacac taccgggtat 2220
gagatggcct tctccaagct aggaggggtgg aagataacgg aaggagcagt cctcaagtcg 2280
tag 2283

<210> 127
<211> 801
<212> PRT
<213> Arabidopsis thaliana

<400> 127

Met Glu Ala Leu Ser His Val Gly Ile Gly Leu Ser Pro Phe Gln Leu
1 5 10 15

Cys Arg Leu Pro Pro Ala Thr Thr Lys Leu Arg Arg Ser His Asn Thr
20 25 30

Ser Thr Thr Ile Cys Ser Ala Ser Lys Trp Ala Asp Arg Leu Leu Ser
35 40 45

Asp Phe Asn Phe Thr Ser Asp Ser Ser Ser Ser Ser Phe Ala Thr Ala
50 55 60

Thr Thr Thr Ala Thr Leu Val Ser Pro Pro Pro Ser Ile Asp Arg Pro
65 70 75 80

Glu Arg His Val Pro Ile Pro Ile Asp Phe Tyr Gln Val Leu Gly Ala
85 90 95

Gln Thr His Phe Leu Thr Asp Gly Ile Arg Arg Ala Phe Glu Ala Arg
100 105 110

Val Ser Lys Pro Pro Gln Phe Gly Phe Ser Asp Asp Ala Leu Ile Ser
115 120 125

Arg Arg Gln Ile Leu Gln Ala Ala Cys Glu Thr Leu Ser Asn Pro Arg
130 135 140

Ser Arg Arg Glu Tyr Asn Glu Gly Leu Leu Asp Asp Glu Glu Ala Thr
145 150 155 160

Val Ile Thr Asp Val Pro Trp Asp Lys Val Pro Gly Ala Leu Cys Val
165 170 175

Leu Gln Glu Gly Gly Glu Thr Glu Ile Val Leu Arg Val Gly Glu Ala
 180 185 190

Leu Leu Lys Glu Arg Leu Pro Lys Ser Phe Lys Gln Asp Val Val Leu
 195 200 205

Val Met Ala Leu Ala Phe Leu Asp Val Ser Arg Asp Ala Met Ala Leu
 210 215 220

Asp Pro Pro Asp Phe Ile Thr Gly Tyr Glu Phe Val Glu Glu Ala Leu
 225 230 235 240

Lys Leu Leu Gln Glu Glu Gly Ala Ser Ser Leu Ala Pro Asp Leu Arg
 245 250 255

Ala Gln Ile Asp Glu Thr Leu Glu Glu Ile Thr Pro Arg Tyr Val Leu
 260 265 270

Glu Leu Leu Gly Leu Pro Leu Gly Asp Asp Tyr Ala Ala Lys Arg Leu
 275 280 285

Asn Gly Leu Ser Gly Val Arg Asn Ile Leu Trp Ser Val Gly Gly Gly
 290 295 300

Gly Ala Ser Ala Leu Val Gly Gly Leu Thr Arg Glu Lys Phe Met Asn
 305 310 315 320

Glu Ala Phe Leu Arg Met Thr Ala Ala Glu Gln Val Asp Leu Phe Val
 325 330 335

Ala Thr Pro Ser Asn Ile Pro Ala Glu Ser Phe Glu Val Tyr Glu Val
 340 345 350

Ala Leu Ala Leu Val Ala Gln Ala Phe Ile Gly Lys Lys Pro His Leu
 355 360 365

Leu Gln Asp Ala Asp Lys Gln Phe Gln Gln Leu Gln Gln Ala Lys Val
 370 375 380

Met Ala Met Glu Ile Pro Ala Met Leu Tyr Asp Thr Arg Asn Asn Trp
 385 390 395 400

Glu Ile Asp Phe Gly Leu Glu Arg Gly Leu Cys Ala Leu Leu Ile Gly
 405 410 415

Lys Val Asp Glu Cys Arg Met Trp Leu Gly Leu Asp Ser Glu Asp Ser
 420 425 430
 Gln Tyr Arg Asn Pro Ala Ile Val Glu Phe Val Leu Glu Asn Ser Asn
 435 440 445
 Arg Asp Asp Asn Asp Asp Leu Pro Gly Leu Cys Lys Leu Leu Glu Thr
 450 455 460
 Trp Leu Ala Gly Val Val Phe Pro Arg Phe Arg Asp Thr Lys Asp Lys
 465 470 475 480
 Lys Phe Lys Leu Gly Asp Tyr Tyr Asp Asp Pro Met Val Leu Ser Tyr
 485 490 495
 Leu Glu Arg Val Glu Val Val Gln Gly Ser Pro Leu Ala Ala Ala Ala
 500 505 510
 Ala Met Ala Arg Ile Gly Ala Glu His Val Lys Ala Ser Ala Met Gln
 515 520 525
 Ala Leu Gln Lys Val Phe Pro Ser Arg Tyr Thr Asp Arg Asn Ser Ala
 530 535 540
 Glu Pro Lys Asp Val Gln Glu Thr Val Phe Ser Val Asp Pro Val Gly
 545 550 555 560
 Asn Asn Val Gly Arg Asp Gly Glu Pro Gly Val Phe Ile Ala Glu Ala
 565 570 575
 Val Arg Pro Ser Glu Asn Phe Glu Thr Asn Asp Tyr Ala Ile Arg Ala
 580 585 590
 Gly Val Ser Glu Ser Ser Val Asp Glu Thr Thr Val Glu Met Ser Val
 595 600 605
 Ala Asp Met Leu Lys Glu Ala Ser Val Lys Ile Leu Ala Ala Gly Val
 610 615 620
 Ala Ile Gly Leu Ile Ser Leu Phe Ser Gln Lys Tyr Phe Leu Lys Ser
 625 630 635 640

Ser Ser Ser Phe Gln Arg Lys Asp Met Val Ser Ser Met Glu Ser Asp
645 650 655

Val Ala Thr Ile Gly Ser Val Arg Ala Asp Asp Ser Glu Ala Leu Pro
660 665 670

Arg Met Asp Ala Arg Thr Ala Glu Asn Ile Val Ser Lys Trp Gln Lys
675 680 685

Ile Lys Ser Leu Ala Phe Gly Pro Asp His Arg Ile Glu Met Leu Pro
690 695 700

Glu Val Leu Asp Gly Arg Met Leu Lys Ile Trp Thr Asp Arg Ala Ala
705 710 715 720

Glu Thr Ala Gln Leu Gly Leu Val Tyr Asp Tyr Thr Leu Leu Lys Leu
725 730 735

Ser Val Asp Ser Val Thr Val Ser Ala Asp Gly Thr Arg Ala Leu Val
740 745 750

Glu Ala Thr Leu Glu Glu Ser Ala Cys Leu Ser Asp Leu Val His Pro
755 760 765

Glu Asn Asn Ala Thr Asp Val Arg Thr Tyr Thr Thr Arg Tyr Glu Val
770 775 780

Phe Trp Ser Lys Ser Gly Trp Lys Ile Thr Glu Gly Ser Val Leu Ala
785 790 795 800

Ser

<210> 128

<211> 2406

<212> DNA

<213> Arabidopsis thaliana

<400> 128

atggaagctc tgagtcacgt cggcattggt ctctcccat tocaattatg ccgattacca 60

ccggcgacga caaagctccg acgtagccac aacaccteta caactatctg ctccgccagc 120

aaatgggccc accgtcttct ctccgacttc aatttcacct ccgattcctc ctctcctcc 180

ttcgccaccg ccaccaccac cgccactctc gtctctccgc caccatctat tgatcgcccc 240

gaacgccacg tccccatccc cattgatttc taccaggtat taggagctca aacacatttc	300
ttaaccgatg gaatcagaag agcattcgaa gctagggttt cgaaaccgcc gcaattcggt	360
ttcagcgacg acgctttaat cagccggaga cagattcttc aagctgcttg cgaaactctg	420
tctaactctc ggtctagaag agagtacaat gaaggctctc ttgatgatga agaagctaca	480
gtcatcactg atgttccttg ggataagggt cctgggtgctc tctgtgtatt gcaagaagggt	540
ggtgagactg agatagttct tcgggttggt gaggtctctgc ttaaggagag gttgcctaag	600
tcgtttaagc aagatgtggt tttagttatg gcgcttgctt ttctcgatgt ctcgagggat	660
gctatggcat tggatccacc tgattttata actggttatg agtttggtga ggaagctttg	720
aagcttttac aggaggaagg agcaagtagc cttgcaccgg atttacgtgc acaaattgat	780
gagactttgg aagagatcac tccgcgttat gtcttgagc tacttggtt accgcttggt	840
gatgattacg ctgcgaaaag actaaatggt ttaagcggtg tgcggaatat tttgtggtct	900
gttgaggag gtggagcatc agctcttggt gggggtttga cccgtgagaa gtttatgaat	960
gaggcgtttt tacgaatgac agctgctgag caggttgatc tttttgtagc taccccaagc	1020
aatattccag cagagtcatt tgaagtttac gaagttgcac ttgctcttgt ggctcaagct	1080
tttattggta agaagccaca ctttttacag gatgctgata agcaattcca gcaacttcag	1140
caggctaagg taatggctat ggagattcct gcgatgttgt atgatacacg gaataattgg	1200
gagatagact tcggtctaga aaggggactc tgtgcactgc ttataggcaa agttgatgaa	1260
tgccgtatgt ggttgggctt agacagtgag gattcacaat ataggaatcc agctattgtg	1320
gagtttgttt tggagaattc aaatcgtgat gacaatgatg atctccctgg actatgcaaa	1380
ttgttggaac cctgggttggc aggggttgctc tttcctaggt tcagagacac caaagataaa	1440
aaattttaaac tcggggacta ctatgatgat cctatggttt tgagttactt ggaaagagtg	1500
gaggtagttc agggttctcc tttagctgct gctgcagcta tggcaaggat tggagccgag	1560
catgtgaaag ctagtgtat gcaggcactg cagaaagttt ttccctcccg ctatacagat	1620
agaaactcgg ctgaacccaa ggatgtgcaa gagacagtgt ttagtgtaga tcctgttggt	1680
aacaatgtag gccgtgatgg tgagcctggt gtctttattg cagaagctgt aagaccctct	1740
gaaaactttg aaactaatga ttatgcaatt cgagctgggg tctcagagag tagcgttgat	1800
gaaactactg ttgaaatgtc cgttgctgat atgttaaagg aggcaagtgt gaagatccta	1860
gctgctgggtg tggcaattgg actgatttca ctgttcagcc agaagtattt tcttaaaagc	1920
agctcatctt ttcaacgcaa ggatatgggt tcttctatgg aatctgatgt cgctaccata	1980

gggtcagtca gagctgacga ttcagaagca cttcccagaa tggatgctag gactgcagag 2040
 aatatagtat ccaagtggca gaagattaag tctctggctt ttgggctga tcaccgcata 2100
 gaaatgttac cagaggtttt ggatgggcga atgctgaaga tttggactga cagagcagct 2160
 gaaactgcgc agcttgggtt ggtttatgat tatacactgt tgaaactatc tgttgacagt 2220
 gtgacagtct cagcagatgg aaccctgtct ctggtggaag caactctgga ggagtctgct 2280
 tgtctatctg atttggttca tccagaaaac aatgctactg atgtcagaac ctacacaaca 2340
 agatacgaag ttttctggtc caagtcaggg tggaaaatca ctgaaggctc tgttcttgca 2400
 tcataa 2406

<210> 129
 <211> 801
 <212> PRT
 <213> Arabidopsis thaliana

<400> 129

Met Glu Ala Leu Ser His Val Gly Ile Gly Leu Ser Pro Phe Gln Leu
1 5 10 15

Cys Arg Leu Pro Pro Ala Thr Thr Lys Leu Arg Arg Ser His Asn Thr
20 25 30

Ser Thr Thr Ile Cys Ser Ala Ser Lys Trp Ala Asp Arg Leu Leu Ser
35 40 45

Asp Phe Asn Phe Thr Ser Asp Ser Ser Ser Ser Ser Phe Ala Thr Ala
50 55 60

Thr Thr Thr Ala Thr Leu Val Ser Pro Pro Pro Ser Ile Asp Arg Pro
65 70 75 80

Glu Arg His Val Pro Ile Pro Ile Asp Phe Tyr Gln Val Leu Gly Ala
85 90 95

Gln Thr His Phe Leu Thr Asp Gly Ile Arg Arg Ala Phe Glu Ala Arg
100 105 110

Val Ser Lys Pro Pro Gln Phe Gly Phe Ser Asp Asp Ala Leu Ile Ser
115 120 125

Arg Arg Gln Ile Leu Gln Ala Ala Cys Glu Thr Leu Ser Asn Pro Arg
130 135 140

Ser Arg Arg Glu Tyr Asn Glu Gly Leu Leu Asp Asp Glu Glu Ala Thr
 145 150 155 160
 Val Ile Thr Asp Val Pro Trp Asp Lys Val Pro Gly Ala Leu Cys Val
 165 170 175
 Leu Gln Glu Gly Gly Glu Thr Glu Ile Val Leu Arg Val Gly Glu Ala
 180 185 190
 Leu Leu Lys Glu Arg Leu Pro Lys Ser Phe Lys Gln Asp Val Val Leu
 195 200 205
 Val Met Ala Leu Ala Phe Leu Asp Val Ser Arg Asp Ala Met Ala Leu
 210 215 220
 Asp Pro Pro Asp Phe Ile Thr Gly Tyr Glu Phe Val Glu Glu Ala Leu
 225 230 235 240
 Lys Leu Leu Gln Glu Glu Gly Ala Ser Ser Leu Ala Pro Asp Leu Arg
 245 250 255
 Ala Gln Ile Asp Glu Thr Leu Glu Glu Ile Thr Pro Arg Tyr Val Leu
 260 265 270
 Glu Leu Leu Gly Leu Pro Leu Gly Asp Asp Tyr Ala Ala Lys Arg Leu
 275 280 285
 Asn Gly Leu Ser Gly Val Arg Asn Ile Leu Trp Ser Val Gly Gly Gly
 290 295 300
 Gly Ala Ser Ala Leu Val Gly Gly Leu Thr Arg Glu Lys Phe Met Asn
 305 310 315 320
 Glu Ala Phe Leu Arg Met Thr Ala Ala Glu Gln Val Asp Leu Phe Val
 325 330 335
 Ala Thr Pro Ser Asn Ile Pro Ala Glu Ser Phe Glu Val Tyr Glu Val
 340 345 350
 Ala Leu Ala Leu Val Ala Gln Ala Phe Ile Gly Lys Lys Pro His Leu
 355 360 365

Leu Gln Asp Ala Asp Lys Gln Phe Gln Gln Leu Gln Gln Ala Lys Val
 370 375 380
 Met Ala Met Glu Ile Pro Ala Met Leu Tyr Asp Thr Arg Asn Asn Trp
 385 390 395 400
 Glu Ile Asp Phe Gly Leu Glu Arg Gly Leu Cys Ala Leu Leu Ile Gly
 405 410 415
 Lys Val Asp Glu Cys Arg Met Trp Leu Gly Leu Asp Ser Glu Asp Ser
 420 425 430
 Gln Tyr Arg Asn Pro Ala Ile Val Glu Phe Val Leu Glu Asn Ser Asn
 435 440 445
 Arg Asp Asp Asn Asp Asp Leu Pro Gly Leu Cys Lys Leu Leu Glu Thr
 450 455 460
 Trp Leu Ala Gly Val Val Phe Pro Arg Phe Arg Asp Thr Lys Asp Lys
 465 470 475 480
 Lys Phe Lys Leu Gly Asp Tyr Tyr Asp Asp Pro Met Val Leu Ser Tyr
 485 490 495
 Leu Glu Arg Val Glu Val Val Gln Gly Ser Pro Leu Ala Ala Ala Ala
 500 505 510
 Ala Met Ala Arg Ile Gly Ala Glu His Val Lys Ala Ser Ala Met Gln
 515 520 525
 Ala Leu Gln Lys Val Phe Pro Ser Arg Tyr Thr Asp Arg Asn Ser Ala
 530 535 540
 Glu Pro Lys Asp Val Gln Glu Thr Val Phe Ser Val Asp Pro Val Gly
 545 550 555 560
 Asn Asn Val Gly Arg Asp Gly Glu Pro Gly Val Phe Ile Ala Glu Ala
 565 570 575
 Val Arg Pro Ser Glu Asn Phe Glu Thr Asn Asp Tyr Ala Ile Arg Ala
 580 585 590
 Gly Val Ser Glu Ser Ser Val Asp Glu Thr Thr Val Glu Met Ser Val
 595 600 605

Ala Asp Met Leu Lys Glu Ala Ser Val Lys Ile Leu Ala Ala Gly Val
610 615 620

Ala Ile Gly Leu Ile Ser Leu Phe Ser Gln Lys Tyr Phe Leu Lys Ser
625 630 635 640

Ser Ser Ser Phe Gln Arg Lys Asp Met Val Ser Ser Met Glu Ser Asp
645 650 655

Val Ala Thr Ile Gly Ser Val Arg Ala Asp Asp Ser Glu Ala Leu Pro
660 665 670

Arg Met Asp Ala Arg Thr Ala Glu Asn Ile Val Ser Lys Trp Gln Lys
675 680 685

Ile Lys Ser Leu Ala Phe Gly Pro Asp His Arg Ile Glu Met Leu Pro
690 695 700

Glu Val Leu Asp Gly Arg Met Leu Lys Ile Trp Thr Asp Arg Ala Ala
705 710 715 720

Glu Thr Ala Gln Leu Gly Leu Val Tyr Asp Tyr Thr Leu Leu Lys Leu
725 730 735

Ser Val Asp Ser Val Thr Val Ser Ala Asp Gly Thr Arg Ala Leu Val
740 745 750

Glu Ala Thr Leu Glu Glu Ser Ala Cys Leu Ser Asp Leu Val His Pro
755 760 765

Glu Asn Asn Ala Thr Asp Val Arg Thr Tyr Thr Thr Arg Tyr Glu Val
770 775 780

Phe Trp Ser Lys Ser Gly Trp Lys Ile Thr Glu Gly Ser Val Leu Ala
785 790 795 800

Ser

<210> 130
<211> 2637
<212> DNA
<213> Arabidopsis thaliana

<400> 130
gattttaactt atactactca aaatcaaaat tccataaacc ctagacgacc aaacagtctc 60
ttcaatatgt aaaacagAAC aaagtttttg tagtagccta aaaagacact cccatggaag 120
ctctgagtca cgtcggcatt ggtctctccc cattccaatt atgccgatta ccaccggcga 180
cgacaaagct ccgacgtagc cacaacacct ctacaactat ctgctccgcc agcaaatggg 240
ccgaccgtct tctctccgac ttcaatttca cctccgattc ctctctctcc tccttcgcca 300
ccgccaccac caccgccact ctggtctctc cgccaccatc tattgatcgt cccgaacgcc 360
acgtcccccatt ccccatgtgat ttctaccagg tattaggagc tcaaacacat ttcttaaccg 420
atggaatcag aagagcattc gaagctaggg ttccgaaacc gccgcaattc ggtttcagcg 480
acgacgcttt aatcagccgg agacagattc ttcaagctgc ttgCGAAact ctgtctaate 540
ctcgggtctag aagagagtac aatgaaggtc ttcttgatga tgaagaagct acagtcatca 600
ctgatgttcc ttgggataag gttcctggtg ctctctgtgt attgcaagaa ggtggtgaga 660
ctgagatagt tcttcggggtt ggtgaggctc tgcttaagga gaggttgctt aagtcgttta 720
agcaagatgt ggttttagtt atggcgcttg cgtttctcga tgtctcgagg gatgctatgg 780
cattggatcc acctgatttt ataactggtt atgagtttgt tgaggaagct ttgaagcttt 840
tacaggagga aggagcaagt agccttgac cggatttacg tgcacaaatt gatgagactt 900
tggaagagat cactccgctt tatgtcttgg agctacttgg cttaccgctt ggtgatgatt 960
acgctgcgaa aagactaaat ggtttaagcg gtgtgcggaa tattttgtgg tctggtggag 1020
gaggtggagc atcagctctt gttgggggtt tgaccctga gaagtttatg aatgaggcgt 1080
ttttacgaat gacagctgct gagcaggttg atctttttgt agctacccca agcaatattc 1140
cagcagagtc atttgaagtt tacgaagttg cacttgctct tgtggctcaa gcttttattg 1200
gtaagaagcc acacctttta caggatgctg ataagcaatt ccagcaactt cagcaggcta 1260
aggtaatggc tatggagatt cctgcgatgt tgtatgatac acggaataat tgggagatag 1320
acttcggtct agaaagggga ctctgtgcac tgcttatagg caaagttgat gaatgccgta 1380
tgtggttggg cttagacagt gaggattcac aatataggaa tccagctatt gtggagtttg 1440
ttttggagaa ttcaaatcgt gatgacaatg atgatctccc tggactatgc aaattgttgg 1500
aaacctgggtt ggcaggggtt gtctttccta ggttcagaga caccaaagat aaaaaattta 1560
aactcgggga ctactatgat gatcctatgg ttttgagtta cttggaaaga gtggaggtag 1620
ttcagggttc tccttttagct gctgctgcag ctatggcaag gattggagcc gagcatgtga 1680
aagctagtgc tatgcaggca ctgcagaaag tttttccttc ccgctataca gatagaaact 1740

cggctgaacc caaggatgtg caagagacag tgttttagtgt agatcctggt ggtaacaatg 1800
 taggccgtga tggtagacct ggtgtcttta ttgcagaagc tgtaagaccc tctgaaaact 1860
 ttgaaactaa tgattatgca attcgagctg ggggtctcaga gagtagcggt gatgaaacta 1920
 ctgttgaaat gtccgttgct gatatgttaa aggaggcaag tgtgaagatc ctagctgctg 1980
 gtgtggcaat tggactgatt tcaactgttca gccagaagta ttttcttaaa agcagctcat 2040
 cttttcaacg caaggatatg gtttcttcta tggaatctga tgtcgctacc ataggggtcag 2100
 tcagagctga cgattcagaa gcacttccca gaatggatgc taggactgca gagaatatag 2160
 tatccaagtg gcagaagatt aagtctctgg cttttggggc tgatcacccg atagaaatgt 2220
 taccagaggt tttggatggg cgaatgctga agatttggac tgacagagca gctgaaactg 2280
 cgcagcttgg gttggtttat gattatacac tgttgaaact atctgttgac agtgtgacag 2340
 tctcagcaga tggaaccctg gctctggtgg aagcaactct ggaggagtct gcttgtctat 2400
 ctgatttggg tcatccagaa aacaatgcta ctgatgtcag aacctacaca acaagatacg 2460
 aagttttctg gtccaagtca gggtggaata tcaactgaagg ctctgttctt gcatcataat 2520
 atactcatat gtagcatgtc tgagcttgcg agattctctt tgttttgtaa attctctctc 2580
 taagttagtg ttataaatg aacacaaaaa aattaacggt caaaaaaaaa aaaaaaa 2637

<210> 131
 <211> 801
 <212> PRT
 <213> *Arabidopsis thaliana*

<400> 131

Met Glu Ala Leu Ser His Val Gly Ile Gly Leu Ser Pro Phe Gln Leu
 1 5 10 15

Cys Arg Leu Pro Pro Ala Thr Thr Lys Leu Arg Arg Ser His Asn Thr
 20 25 30

Ser Thr Thr Ile Cys Ser Ala Ser Lys Trp Ala Asp Arg Leu Leu Ser
 35 40 45

Asp Phe Asn Phe Thr Ser Asp Ser Ser Ser Ser Ser Phe Ala Thr Ala
 50 55 60

Thr Thr Thr Ala Thr Leu Val Ser Pro Pro Pro Ser Ile Asp Arg Pro
 65 70 75 80

Glu	Arg	His	Val	Pro	Ile	Pro	Ile	Asp	Phe	Tyr	Gln	Val	Leu	Gly	Ala	
				85					90					95		
Gln	Thr	His	Phe	Leu	Thr	Asp	Gly	Ile	Arg	Arg	Ala	Phe	Glu	Ala	Arg	
			100					105					110			
Val	Ser	Lys	Pro	Pro	Gln	Phe	Gly	Phe	Ser	Asp	Asp	Ala	Leu	Ile	Ser	
		115					120					125				
Arg	Arg	Gln	Ile	Leu	Gln	Ala	Ala	Cys	Glu	Thr	Leu	Ser	Asn	Pro	Arg	
		130				135					140					
Ser	Arg	Arg	Glu	Tyr	Asn	Glu	Gly	Leu	Leu	Asp	Asp	Glu	Glu	Ala	Thr	
145					150					155					160	
Val	Ile	Thr	Asp	Val	Pro	Trp	Asp	Lys	Val	Pro	Gly	Ala	Leu	Cys	Val	
				165					170					175		
Leu	Gln	Glu	Gly	Gly	Glu	Thr	Glu	Ile	Val	Leu	Arg	Val	Gly	Glu	Ala	
			180					185					190			
Leu	Leu	Lys	Glu	Arg	Leu	Pro	Lys	Ser	Phe	Lys	Gln	Asp	Val	Val	Leu	
		195					200					205				
Val	Met	Ala	Leu	Ala	Phe	Leu	Asp	Val	Ser	Arg	Asp	Ala	Met	Ala	Leu	
	210					215					220					
Asp	Pro	Pro	Asp	Phe	Ile	Thr	Gly	Tyr	Glu	Phe	Val	Glu	Glu	Ala	Leu	
225					230					235					240	
Lys	Leu	Leu	Gln	Glu	Glu	Gly	Ala	Ser	Ser	Leu	Ala	Pro	Asp	Leu	Arg	
			245						250					255		
Ala	Gln	Ile	Asp	Glu	Thr	Leu	Glu	Glu	Ile	Thr	Pro	Arg	Tyr	Val	Leu	
			260					265					270			
Glu	Leu	Leu	Gly	Leu	Pro	Leu	Gly	Asp	Asp	Tyr	Ala	Ala	Lys	Arg	Leu	
		275					280					285				
Asn	Gly	Leu	Ser	Gly	Val	Arg	Asn	Ile	Leu	Trp	Ser	Val	Gly	Gly	Gly	
	290					295					300					
Gly	Ala	Ser	Ala	Leu	Val	Gly	Gly	Leu	Thr	Arg	Glu	Lys	Phe	Met	Asn	
305					310					315					320	

Glu	Ala	Phe	Leu	Arg	Met	Thr	Ala	Ala	Glu	Gln	Val	Asp	Leu	Phe	Val	325	330	335	
Ala	Thr	Pro	Ser	Asn	Ile	Pro	Ala	Glu	Ser	Phe	Glu	Val	Tyr	Glu	Val	340	345	350	
Ala	Leu	Ala	Leu	Val	Ala	Gln	Ala	Phe	Ile	Gly	Lys	Lys	Pro	His	Leu	355	360	365	
Leu	Gln	Asp	Ala	Asp	Lys	Gln	Phe	Gln	Gln	Leu	Gln	Gln	Ala	Lys	Val	370	375	380	
Met	Ala	Met	Glu	Ile	Pro	Ala	Met	Leu	Tyr	Asp	Thr	Arg	Asn	Asn	Trp	385	390	395	400
Glu	Ile	Asp	Phe	Gly	Leu	Glu	Arg	Gly	Leu	Cys	Ala	Leu	Leu	Ile	Gly	405	410	415	
Lys	Val	Asp	Glu	Cys	Arg	Met	Trp	Leu	Gly	Leu	Asp	Ser	Glu	Asp	Ser	420	425	430	
Gln	Tyr	Arg	Asn	Pro	Ala	Ile	Val	Glu	Phe	Val	Leu	Glu	Asn	Ser	Asn	435	440	445	
Arg	Asp	Asp	Asn	Asp	Asp	Leu	Pro	Gly	Leu	Cys	Lys	Leu	Leu	Glu	Thr	450	455	460	
Trp	Leu	Ala	Gly	Val	Val	Phe	Pro	Arg	Phe	Arg	Asp	Thr	Lys	Asp	Lys	465	470	475	480
Lys	Phe	Lys	Leu	Gly	Asp	Tyr	Tyr	Asp	Asp	Pro	Met	Val	Leu	Ser	Tyr	485	490	495	
Leu	Glu	Arg	Val	Glu	Val	Val	Gln	Gly	Ser	Pro	Leu	Ala	Ala	Ala	Ala	500	505	510	
Ala	Met	Ala	Arg	Ile	Gly	Ala	Glu	His	Val	Lys	Ala	Ser	Ala	Met	Gln	515	520	525	
Ala	Leu	Gln	Lys	Val	Phe	Pro	Ser	Arg	Tyr	Thr	Asp	Arg	Asn	Ser	Ala	530	535	540	

Glu	Pro	Lys	Asp	Val	Gln	Glu	Thr	Val	Phe	Ser	Val	Asp	Pro	Val	Gly	545	550	555	560
Asn	Asn	Val	Gly	Arg	Asp	Gly	Glu	Pro	Gly	Val	Phe	Ile	Ala	Glu	Ala	565	570	575	
Val	Arg	Pro	Ser	Glu	Asn	Phe	Glu	Thr	Asn	Asp	Tyr	Ala	Ile	Arg	Ala	580	585	590	
Gly	Val	Ser	Glu	Ser	Ser	Val	Asp	Glu	Thr	Thr	Val	Glu	Met	Ser	Val	595	600	605	
Ala	Asp	Met	Leu	Lys	Glu	Ala	Ser	Val	Lys	Ile	Leu	Ala	Ala	Gly	Val	610	615	620	
Ala	Ile	Gly	Leu	Ile	Ser	Leu	Phe	Ser	Gln	Lys	Tyr	Phe	Leu	Lys	Ser	625	630	635	640
Ser	Ser	Ser	Phe	Gln	Arg	Lys	Asp	Met	Val	Ser	Ser	Met	Glu	Ser	Asp	645	650	655	
Val	Ala	Thr	Ile	Gly	Ser	Val	Arg	Ala	Asp	Asp	Ser	Glu	Ala	Leu	Pro	660	665	670	
Arg	Met	Asp	Ala	Arg	Thr	Ala	Glu	Asn	Ile	Val	Ser	Lys	Trp	Gln	Lys	675	680	685	
Ile	Lys	Ser	Leu	Ala	Phe	Gly	Pro	Asp	His	Arg	Ile	Glu	Met	Leu	Pro	690	695	700	
Glu	Val	Leu	Asp	Gly	Arg	Met	Leu	Lys	Ile	Trp	Thr	Asp	Arg	Ala	Ala	705	710	715	720
Glu	Thr	Ala	Gln	Leu	Gly	Leu	Val	Tyr	Asp	Tyr	Thr	Leu	Leu	Lys	Leu	725	730	735	
Ser	Val	Asp	Ser	Val	Thr	Val	Ser	Ala	Asp	Gly	Thr	Arg	Ala	Leu	Val	740	745	750	
Glu	Ala	Thr	Leu	Glu	Glu	Ser	Ala	Cys	Leu	Ser	Asp	Leu	Val	His	Pro	755	760	765	
Glu	Asn	Asn	Ala	Thr	Asp	Val	Arg	Thr	Tyr	Thr	Thr	Arg	Tyr	Glu	Val	770	775	780	

Phe	Trp	Ser	Lys	Ser	Gly	Trp	Lys	Ile	Thr	Glu	Gly	Ser	Val	Leu	Ala
785					790					795					800

Ser

<210> 132
 <211> 561
 <212> DNA
 <213> Arabidopsis thaliana

<220>
 <221> misc_feature
 <222> (127)..(127)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (520)..(520)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (541)..(541)
 <223> n is a, c, g, or t

<400> 132
 ataaacacta acttagagag agaatttaca aaacaaagag aatctcgcaa gctcagacat 60
 gctacatatg agtatattat gatgcaagaa cagagccttc agtgattttc caccctgact 120
 tggaccngaa aacttcgtat cttgttgtgt aggttctgac atcagtagca ttgttttctg 180
 gatgaaccaa atcagataga caagcagact cctccagagt tgcttccacc agagcacggg 240
 ttccatctgc tgagactgtc acactgtcaa cagatagttt caacagtgtg taatcataaa 300
 ccaacccaag ctgcgcagtt tcagctgctc tgtcagtcca aatcttcagc attcgcccat 360
 ccaaaacctc tggtaacatt tctatgcggg gatcaggccc aaaagccaga gacttaatct 420
 tctgccactt ggatactata ttctctgcag tcttagcatc cattctggga agtgcttctg 480
 aatcgtcagc tctgactgac cctatggtag cgacatcagn ttccatagaa gaaaccatat 540
 ncttgcgttg aaaagatgag c 561

<210> 133
 <211> 295
 <212> DNA
 <213> Medicago truncatula

<400> 133
ctggtgtagc aattggactc ataacttttag ctggtttgaa gattttacct tctaaaaatg 60
gctcgcccggt tcttcacaaa gtgactgggt cagcaattgc gtcagatact atcaatttag 120
gtcctgtagg agatgaagaa ttaggagagc aactaccaa aatgagtgc atgggtgcag 180
aagctctagt ccgcaagtgg caatatatca catcccaagc ttttggacct gaccattgcc 240
taggaagatt gcaagaggtg ttggacggcc aaatggtgaa gatatggact gatcg 295

<210> 134
<211> 527
<212> DNA
<213> *Medicago truncatula*

<400> 134
cccaagcttt tggacctgac cattgcctag gaagattgca agaggtgttg gacggcgaaa 60
tggtgaagat atggactgat cgagcagctg agattgcaga gcttggttgg tcatatgact 120
acaacttggg ggatctcaac atcgacagtg tgaccatatc acagaatggg cggcgtgcag 180
tagtggaac aactctcaaa gagtctaccc acctcactgc tgttggtcat ccacagcatg 240
ctacttccaa cagcagaacc tacacaacaa gatatgaaat gtctttttca gattcagggt 300
ggaaaattat tgaaggagct gtccttgagt cgtaattagg ttttgtaata tgtaatatat 360
gtcagggttag tacacttcaa tattaacccc ctcgagccta tgcccactgt cttgtatgta 420
cctgttggtt tgtgcatttt tcaagcattt atgtagtcag gctgtaaata cttggagggt 480
atttgatcaa ataattatcc gggttaaaaaa aaaaaaaaaa aaaaaaa 527

<210> 135
<211> 660
<212> DNA
<213> *Medicago truncatula*

<400> 135
cacgcttctc caaaaaacct aaccgtctcc attcctccgc cgtctccgcc accagtaaata 60
gggcggagcg actcatttcc gatttccaat tcctcggcga cacctcctct tcctcctcca 120
ccaccacctc cgccacagtc actctcactc cttcttacct tcctccgata gaacgccacg 180
tgtcactccc tctcgacctg tacaaaatcc tcggcgccga aacgcatttt ctcggtgatg 240
gtattcggag agcttatgaa gcgaaattct cgaagcctcc tcagtatgct ttcagtaatg 300
aagctttgat tagtcgtcgt cagattcttc aagctgcttg tgaaacccta gctgatcctg 360
cttctagaag agagtataat caaagcctcg tcgacgatga agacgaagat gaggaatctt 420
ccattctcac tgaaatccct ttcgacaaag ttctggagc tctgtgcgtg ttgcaagaag 480

ctggagagac ggagttggtg cttcggattg gaggggggtt actgagagag aggttaccga	540
agatgtttta gcaagatggt gtgttggtta tggcgcttgc atatgttgac gtttctaggg	600
atgctatggc tttgtccccg ccagatttca ttgttgcttg tgagatgctg gaaagggcat	660

<210> 136
 <211> 187
 <212> DNA
 <213> Glycine max

<400> 136	
agcgttgtgt gtgttgcagg aagctggaga gacggagctt gtgcttgaga ttgggcaggg	60
tttgcttagg gagaggttgc cgaagacgtt taagcaggat gttgtgttgg ctatggcact	120
cgcatttggt gacgtgtcaa gggatgcttg gcttgttcac cggatttcat tgcggctgtg	180
agatgct	187

<210> 137
 <211> 608
 <212> DNA
 <213> Solanum tuberosum

<400> 137	
ggaaagcttc cttacaatg gaggcattaa cacagctaag ctttggcatt tgtactccac	60
gcctttcatc accatttcaa ctagccgccg ccggtggtaa gaagccgccg agactcaatg	120
ccgttaacgg aggagctagt agtgttaccg gtggaacaag tagtttacct actaacttct	180
ccgctagtaa atggggcggat cgtcttctcg ccgatttcca attccttcct tccaccacca	240
cctccgactc atcggatttc cagaattcaa cttctacaac ctccgttacg actattcctc	300
ctcctgttgc tccttcagac caccacattt caatgcctat agacttttat agagtgcttg	360
gtgctgaagc tcacttcctc ggtgacggta ttaggagatg ctacgatgct agaattacaa	420
agcctccgca gtacggatac agtcaggaag cattgattgg ccgacggcag attcttcaag	480
ctgcttgtga aacccttgct gactctacct ctcgtagaga gtacaatcaa ggccctcgctc	540
agcatgagtt cgatactatt ctaactcctg tcccctggga taaagttccg ggagcaatgt	600
gtgttttg	608

<210> 138
 <211> 307
 <212> DNA
 <213> *Populus balsamifera*

 <400> 138
 gaagatttca tgaatgaggc cttcttacgt atgacagcag ctgagcaggt tgatctgttc 60
 gtcaccacgc caagtaatat cccgggtcaa aattttgaag tttatggagt ggcacttgcc 120
 cttgttgccc aagctttcat tggtaaaaag cctcatctca tcacagatgc tgataaccta 180
 ttcggaacgc ttcagcagat taaggtaaca aatcaaggga gtcttggtcc tgtctttggt 240
 tccatggaaa accgtgatat tgactttggg ttggagaggg gctttgttca ctgctttag 300
 gccagct 307

<210> 139
 <211> 416
 <212> DNA
 <213> *Mesembryanthemum crystallinum*

 <400> 139
 gggaaacgtg ccttggtgga agcaactctt caagaatcag cgcagttaac tgacgttaac 60
 caacctgagc ataacgattc ttacagcaga acatacacia caaggtaga gatgtttcac 120
 tccaatgctg ggtggaagat catagaggga gctgtcctcc aatcttaagc tgctggaaat 180
 ccagtcttga atgtacatat ttccacatca tctgcacatt atgaatgaag gatggtatgt 240
 gttttctgga cagtgggtatt tgatcatggt gtgtttatct tggtaacaag ttttgatcat 300
 tatcaaaaag atcactcttg taagttagtt tttccacaa taaatcaact atttatatga 360
 aagtttttat atcaggacta cttgccttta cttatataaa ctttgagaaa tttttt 416

<210> 140
 <211> 465
 <212> DNA
 <213> *Oryza sativa*

<220>
 <221> misc_feature
 <222> (113)..(113)
 <223> n is a, c, g, or t

<400> 140
 tgggtgcttct catttgggct gctgctgctg ctattgcaaa acttggtgct caagctacag 60
 ctgcacttgg tactgtgaaa tcaaatgcta ttcaagcgtt caacaagggt ttnccattga 120
 tagaacagtt agacaggta gccatggaaa atactaaaga tggccctggg ggatatcttg 180

aaaat t t t t t g a	ccaggaaaat	gcacctgctc	atgattcgag	aatgccgcc	ttgaagatta	240
tctctctggc	gcactgtttg	cactgttggc	agtaattggg	gccaaatatt	tgctctgtaa	300
gaggccccctt	tctgctatta	ggagtgcgca	tggatctgtg	gcagttgcta	atagtgtcga	360
ctctactgat	gatcctgcac	tagatgaaga	tccagtacat	attcctagaa	tggatgcgaa	420
gctggcagaa	gatattgttc	gcaagtggca	gagtatcaaa	tctaa		465

<210> 141
 <211> 309
 <212> DNA
 <213> *Oryza sativa*

<400> 141	
atcataagaa	gcgccaagaa
gggcttcaag	gtgcgagaaa
cattttgtgg	agcgttggca
	60
gaggaggtat	tgctaccgtt
ggaggaggat	tttctcgtga
agccttcattg	aacgaggctt
	120
ttttgaggat	gacatcaatt
gaacagatgg	atttcttttc
aaaaacaccg	aatagcattc
	180
ctcctgaatg	gtttgaaatt
tacaatgtag	cacttgcaca
tgctcgtcaa	gcaattataa
	240
gtaaaaggcc	acaattcatc
atgatggcgg	atgatctttt
tgaacaactc	cagaagttcc
	300
acataggtc	
	309

<210> 142
 <211> 336
 <212> DNA
 <213> *Oryza sativa*

<400> 142	
atcataagaa	gcgccaagaa
gggcttcaag	gtgcgagaaa
cattttgtgg	agcgttggca
	60
gaggaggtat	tgctaccgtt
ggaggaggat	tttctcgtga
agccttcattg	aacgaggctt
	120
ttttgaggat	gacatcaatt
gaacagatgg	atttcttttc
aaaaacaccg	aatagcattc
	180
ctcctgaatg	gtttgaaatt
tacaatgtag	cacttgcaca
tgctcgtcaa	gcaattataa
	240
gtaaaaggcc	acaattcatc
atgatggcgg	atgatctttt
tgaacaactc	cagaagttca
	300
acatagggtc	tcattatgct
tatgataatg	agatgg
	336

<210> 143
 <211> 537
 <212> DNA
 <213> *Triticum aestivum*

<400> 143	
cagtgccttgc	aattggaggg
cacttactgg	aggaccgcc
gccaagcgg	ttcaagcagg
	60
atgtggtgct	ggcaatggcg
ctcgcttatg	tggatctatc
aagggaacgca	atggcggtc
	120

gccctccaga tgtaatccgc tgctgtgagg tgcttgaaag ggctctcaag cttttgcagg	180
aggatggggc aatcaatctc gcacctgggt tgctctcaca aattgatgaa actctggagg	240
atatcacacc tcgttgtgtt ttggagcttc ttgcccttcc tcttgatgaa aaacatcaga	300
atgaacacca agaaggtctt cgtgggtgtga gaaacatctt gtggagtgtt ggcagaggag	360
gtattggtac tgttgaggga ggattttcgc gtgaagccta catgaatgaa gccttcctgc	420
agatgacatc ggcgagcag atggatttct tctcaaaaac accgaatagc ataccgcctg	480
aatggtttga aatctatagc gtggcacttg caaatgttgc tcaagcaatt gtaagta	537

<210> 144
 <211> 418
 <212> DNA
 <213> Triticum monococcum

<220>
 <221> misc_feature
 <222> (144)..(144)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (301)..(301)
 <223> n is a, c, g, or t

<400> 144	
acacctcgtt gtgttttgga gcttcttgcc cttcctcttg atgaaaagca ccagagtaaa	60
cgccaagaag gtcttcgtgg tgtgagaaac attttggtgga gtgttggttag aggaggtatt	120
gctactgttg gaggaggatt ttcnctgaa gcctacatga atgaggcctt tttgcagatg	180
acatcagcgg agcagatgga tttcttttca aaaacgcca atagcatacc acctgaatgg	240
tttgaaatct atagtgtggc actcgcaaat gttgctcaag caattgtaag taaaaggcca	300
nagctcatca tgggtggcaga tgatcttttc gaacagctcc agaagttcaa tataggttct	360
caatatgctt atgataatga attggatctt gtgttggaag gggcactttg ctcattgc	418

<210> 145
 <211> 480
 <212> DNA
 <213> Hordeum vulgare

<400> 145	
gcgagcatga gtccgtggca gttgctaatt ttgttgactc aggtgatgat gacgaaccag	60
atgagcccat acagattcct aaaatggatg cgaagctggc agaagatatt gttcgcaagt	120
ggcagagcat caaatccaag gccttgggat cagatcattc tgttgcatca ttgcaagagg	180

ttcttgatgg caacatgctg aaggatatgga cggaccgagc agcagagatc gagcgcaaag	240
gctgggttctg ggactacacg ctgtccaacg tggcgatcga cagcatcacc gtctccctgg	300
acggacggcg ggcgaccgtg gaggcgacaa ttgaggaggc gggtcagctc accgacgcaa	360
ccgacccag gaacgatgat ttgtacgaca ctaagtacac cacccggtac gagatggcct	420
tcaccggacc aggagggtgg aagataaccg aaggcgagc cctcaagtcg tcatagggcg	480

<210> 146
 <211> 622
 <212> DNA
 <213> Hordeum vulgare

<220>
 <221> misc_feature
 <222> (11)..(12)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (14)..(14)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (65)..(65)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (88)..(88)
 <223> n is a, c, g, or t

<400> 146	
gaaactctgg nngnagatca cccctcggtg tgttttagag cttcttgccc ttctcttga	60
cgagnaagca ccagagtaaa cgccaagnaa ggtcttcgtg gtgtgagaaa cattttgtgg	120
agtgttggtg gaggaggtat tgctactggt ggtggaggat tttcacggga agcctacatg	180
aatgaggcct ttttgcagat gacatcagct gagcagatgg atttcttttc aaaaacgccg	240
aatagcatac cacctgaatg gtttgaaatc tatagcgtgg cactcgcaaa tgttgctcaa	300
gcaattgtaa gtaaaaggcc agagctcatc atggtggcag atgatctttt cgaacagctc	360
cagaagttca atatcggttc tcaatatgct tatggtaacg agatggatct tgcgttgga	420
agggcacttt gctcattgct tgtgggagac attagcaact gcagaacttg gcttgcgatt	480

gataatgaat cttcaccaca tagagacccg aaaattgtag agttttattgt gaacaactct	540
agcattgacc accaggagaa tgatcttctt ccaggcctgt gtaagctttt ggagacttgg	600
cttgtctcag aggttttccc ta	622

<210> 147
 <211> 604
 <212> DNA
 <213> Hordeum vulgare

<220>
 <221> misc_feature
 <222> (13)..(13)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (516)..(516)
 <223> n is a, c, g, or t

<400> 147	
tggcttcacc tgnaaatcca gcactaagtt tctcttatca ccaacccaag gatctcttct	60
agcctagcaa taatccgaat agaacacacc gaaaaacaaa gctcatcgct gactaactga	120
ctaaccaaac tatctccgtc ttccaaactg acaagagcct agactagact gcttatttac	180
acaccagaaa aacacgggag gaatcaatca acaaggttta ctgcacgctg aacgccctat	240
gacgacttga ggactgcgcc ttcggttatc ttccaccctc ctgggtccggt gaaggccatc	300
tcgtagcggg tgggtgtactt agtggtcgac aaatcatcgt tccgtggggtc ggttgcgctcg	360
gtgagctgac ccgcctcctc aattgtcgcc tccacggctg cccgcggtcc gtccaggag	420
acggtgatgc tgtcgatcgc cacgttgaac agcgtgtagt cccagaacca gcctttgcgc	480
tcaatctctg ctgctcggtc tgtccatacc ttcagnatgt tgccatcaag aacctcttgc	540
aatgatgcaa cagaatgatc tgatcccaag gccttggatt tgatgctctg ccacttgcca	600
acaa	604

<210> 148
 <211> 653
 <212> DNA
 <213> Sorghum bicolor

<400> 148	
tatgggtctg tggcagttgc tgactctgtt gatgggtctgg gagcagatga agagccacta	60
gaaattccta gaatggatgc aaagttgggt gaagatattg ttcgcaagtg gcaaagtatc	120

aagtccaagg ctttggggcc agaacacact gtcacggcat tgcaagagat cctcgatggc	180
aacatgctga aggtatggat ggaccgagcc acagagattg agcgtcacgg ttggttctgg	240
gaatacacac tctccgacgt gacgatcgac agtatcaccg tctccatgga cggtcgacgg	300
gcaactgtgg aggcgacgat tgaggagatg ggccaactta ccgacgtagc agacccaaag	360
aacaacgacg cctacgacac aaagtacacc gtcggttacg agatgagcta ctccaagtcc	420
ggaggggtgga ggatcaccga aggagcagtc ctcaagtcgt agaacggtcg tgcagcagga	480
gtaggcgagt aggggttgct caactcccat tcttttttct tttgcaccag tgtatgtaaa	540
taaacagtgt gagcacaggt tcttttctct cctggagaga gtttggttag gttgattagt	600
gatgagttcc tgaggccgag agaatttgtc atctagtttg tattgataga gat	653

<210> 149
 <211> 535
 <212> DNA
 <213> Sorghum bicolor

<400> 149	
gcacgaggat agaacagcta gacagatcag gcaaggatac cccaggatgat gatcttgaga	60
aatctcttga aaaacttgcc caagaaatgt tgctggagat gctatccatg attccaaaaa	120
tgccgctttg aagattatct ctgctggtgc actgtttgca ctatttgacg taataggtct	180
gaagtgcttg cctcgtaaga agtcacttcc tgctcttaag agcgaatatg ggtctgtggc	240
agttgctgac tctgttgatg gtctgggagc agatgaagag ccactagaaa ttcctagaat	300
ggatgcaaag ttggctgaag atattgttcg caagtggcaa agtatcaagt ccaaggcttt	360
ggggccagaa cacactgtca cggcattgca agagatcctc gatggcaaca tgctgaaggt	420
atggatggac cgagccacag agattgagcg tcacggtttg ttctgggaat acacactctc	480
cgacgtgacg atcgacagta tcaccgtctc catggacggt cgacgggcaa ctgtg	535

<210> 150
 <211> 479
 <212> DNA
 <213> Zea mays

<400> 150	
gccacaggcc gccaccgctt ggccccctcca cctgcccgtc cgccagccgc tgggcccagc	60
gcctcttcgc cgacttccac ctctctcccc cgcccgccga cccgccagcc ggggcctcct	120
cttctctctc gtccccgttc gtcccgatct tccccgaagc cgccgaccgc gccttgcccc	180
tcccggtcga cttctacaag attcttgggtg cggagccaca tttctaggc gatggcattc	240

ggagggcggtt cgagtcgcgg atagctaagc cacctcagta tgggtacagc acagaagctc	300
ttgctgggcg acggcaaattg ctgcagattg cccatgatac tctcacaac cagagctcgc	360
gcaccgagta cgaccgtgcg ctttccgagg accgtgatgc ggcactcacc atggatgttg	420
cctgggataa ggttccaggt gtgctgcgtg tgcttcagga ggctggggag gcacaactg	479

<210> 151
 <211> 446
 <212> DNA
 <213> Zea mays

<400> 151	
agcaatgtgg gcaagtgcga cactatagat ctcaaaccat tcaggtggta tgctattcgg	60
tgtttttagag aagaaatcca tctgctcagc tgatgtcatc tgcaagaaag cctcattcat	120
gaaggcctca cgagaaaatc ctctccaac agtagcaata ccaccctgc caacactcca	180
caatatgttt ttgtcacctt gcagaccttc ttggcgttta tttttatgtt tttcatcagt	240
aggaagagca agaagctcca atacacaacg aggtgtaatc tctccaaag tttcatcaat	300
ctgtgcaagc agttcaggtg caagattgct tgcaccatcc tctgcagga gcttcagtgc	360
cctctcaagc acctcacaac agcagattac atctggaggg cttgctgcc tagcatccct	420
tgatatgtcc acataagcca atgcc	446

<210> 152
 <211> 657
 <212> DNA
 <213> Zea mays

<400> 152	
cgcgtcgacg tatagagtct gcatccatgt tgcttgaat gaagcgtctg caaaagaagg	60
ctcttttata accagtcgtg tcaggaagca ttttgaaaat atatcaaat ttctttggct	120
gagtgatagg cctaattcaa atagcaaagg aagtgataaa caccagcgg ttaatgat	180
tactgctgca gtttgcaagc aaaagatgga tattcaagaa gcagaaacac ttgtaaaaca	240
gtggcaagac ataaaatctg aagctcttgg cctgactat caaactgaca tgctacctga	300
gattcttgat ggttcaatgc tctctaagt ggaagactta gcgttattag caaaggacca	360
gtcttgctat tggagatttg tgctgctaaa tcttaatgtt gtctgagccg agataatctt	420
ggatgaaata ggtgctggtg aggcagcaga aattgatgct gtacttgagg aagcggctga	480

gcttggtgac gattcccagc ccaagaaacc gagttattac agcacatatg aagttcagta 540
cgtattgagg aggcagaatc atggatcttg gaaaatctcc gaggctgctg tccgggacct 600
gacgtgattt ctgccaaactc ggcaaacggg ctacacaacc attggcggtat aggcggc 657

<210> 153
<211> 871
<212> DNA
<213> *Ceratopteris richardii*

<400> 153
gtgggtgtctt tgctcgtggt cctggataca caagggatga gtatatgaag gcagcttttt 60
ctcgaatgac agctgctgag caagtagctt tgttcacaaa tacacccagt aatatcccag 120
cagagagttc tgagggtttac acagttgcgc ttgctcacat agcagagggga tttggtgcaa 180
agaagccgca attgattcag gaagctgatt cactctttct tcagcttcag cgaacaaatg 240
cctcatcatc tagtttgcta gttactgggtg gtctacggcc attatcaagt ctgcagcttg 300
atcttgcttt tgaacgagcc atgtgcaaac tgctcctagg agaactggat ggttgctggtg 360
catggctagg tttggatgat acaaactctc catatagaga ccctgcagtg actgattttg 420
ttatagctaa ttcttttgga agtgaggaag gtgattattt accaggcctt tgcaagttgt 480
tggaaggttg gttgagggaa gcggtgtttt tccccaaacc gtcaacagaa aagtggaggt 540
acaagttgag ggagtatttt ttatgatgca aggagaaaaa aagccgccgt gaattttttc 600
gcggggggcg ctatgaaaaa atatatcaa cctttttttg ttggggcgctc gtctacaaag 660
aatgatggag tgtcattgtt gcttttgagg tgacgaaggg gcggcgctcc tctttaaggg 720
atcgtccgtg ggggcgcgcg ctcccatatc gccatcttcg ggacaccttg ttcgtgggtc 780
aaatggtgat gtctttttta ccacgaacgt cacattatc ttataatata agcgtgcggc 840
agcactctca gcttcgacga aacagcctaa a 871

<210> 154
<211> 541
<212> DNA
<213> *Physcomitrella patens*

<400> 154
gagaacggaa gctttagaag tggaggttgt ccccaaaatg gatgctaggt tggcggaaat 60
tatggttcga agatggcaag cagctaaagc tcgagcactt ggttctgctc atgatatggc 120
ggctcttcct gaggtgctgg agggcgagat gctgaagagc tggacagacc gtgttagtga 180
cgtcaagaga aatggttggt tttgggaata cactctcctt ggtcttcaca ttgatagtgt 240

aacagtaagt gacgatggga ggcgagcaac tgcggaagcc actttgcaag aggcagccccg	300
cttgggtggac cgcaacaacc ctgaccacaa tgattcttat agaagcactt acactacgcg	360
atatgacctc cggcattggca tagatgggtg gcgaatcaat ggaggagctg tgctgcgtac	420
ttgattctga gattttcatc tccggatcat gttgacttgt aggcagatcg actagttgca	480
acccttgcat gctacgaatg agtagtcttt ttggatattt tgatccatca tgcagctttg	540
a	541

<210> 155
 <211> 2109
 <212> DNA
 <213> *Protochlorococcus marinus* MED4

<400> 155	
ttggaacttc cattagatca ctttcgttta ataggcgtaa gcccctcagc aacatctgag	60
gaaatattaa gggctttcca attacgcttg gataaaactc ctgatgaagg attcacgtac	120
gaggttttta ctcaaaggtc ggaattgctt cgccttactg cagatttgct tacagatcca	180
gatagtagaa gagattacga aaatttatta ctaaattggag catcagggttt agatttatct	240
tccaatagag aggttgcagg attaattctc ctttgggaat cgggctcttc taaagaagcc	300
tttaaaataa caagaaaagc attgcaaccc ccccaaactc ctgcattggg tagcagtaga	360
gaagctgata ttaccttggt agcggcttta acatctagag atgctgcaat acaagagcaa	420
gatcaaagat cttactcaaa tgctgcagat tttttacaag aaggcataca gcttcttcaa	480
agaatgggca aactagggga attacggaaa actcttgagg aggacttagt gtcgcttctt	540
cogtatcgaa ttcttgattt gttaagtaga gatctaaatg attatgactc gcataaaaaa	600
ggtttaagta tgctggaaaa ttttaataatc aaaagagggtg gattagaagg aaaaaataaa	660
tctgaatata atgattttct aaatcagcaa gaatttgaat ctttctttca acaaataaag	720
ccattcttga ctgttcagga tcagatagat ttatttttag aattacaaaa aaggggttca	780
agtgaagcag gatttttagc ttttttatct ttaacagcaa ttggttttgc aagaagaaaa	840
cctgcaaaat tattcgaagc tcgaaaaata ttaaaaaaac taaatttatc aggacttgac	900
tcaatgccat taatagggtg ccttgatttg ctttttagcag atgttgagca atcctcagca	960
aggtttttaa gtagttccga tgagaagtta agagattggg tgaataatta tcctggagaa	1020
aaattagaag caatatgtat tttttgtaa aattgggttag aaaatgatgt tttgggttgg	1080
tatagggata ttgatttaaa agaaatcgat ttagactctt ggtttgaaga tagagaaatc	1140
caagaattta ttgagcaaat agaaaagaag tcaaatagaa ctgtgtttta gtctgggcct	1200

caaaataaac ctatTTTTca agcccaagaa tctttaaaag attcaagtac gggccctgat 1260
 ttaaattcgg ataattttga agaaggccga ttacctttgc ctggaggagt aagagaagat 1320
 ggtcaagaag ttattgaaga aaatatttat acagatgaga ttattaaaaa caaatcaata 1380
 gaattttata agtacgcaat agaaaaaatt gctgaattaa aatttgtatt tggagaagcc 1440
 ttagagaact acagaatatt taataaatct tcctacctaa catatctgta tgcttttttg 1500
 attttatttg cttttggcct aggtgttgga tttgtaagaa ataatctcaa aaaacccgtg 1560
 caggaaaaag aaataattga taactcgta tcgataaatg aaaataagaa tgtcttttat 1620
 gaaggtttaa atcaagatga taaaaagaaa gttctcgata actcaaaaat tattctctca 1680
 gataatgcag aaaaagttat tttttcaggt gaagaaataa aaactgcttc tccctcctta 1740
 gaaaaaatag aaaatttaat taatacatgg cttgttaaca aaagtaaatt tctagcagga 1800
 aaagtgaaa ttaatttatc aaagatagtt caagatgatt tgattgatag attaaagaag 1860
 gaaagagaac ttgatattca aaaagggtatc tacaaaaata tcaatgctaa tatcgaaaat 1920
 attgtacttt taactcaaac ggcatacaaga atatcagtat cagttgactt aaagtattca 1980
 gaaaaaatat taaaaataga tggggaattg ataatgaaa caactttcac tccttttttg 2040
 aaagttaa atatttttagg tttctcaaat aactcctgga aattagttga ctacattagt 2100
 ggtgttttag 2109

<210> 156
 <211> 702
 <212> PRT
 <213> *Protochlorococcus marinus* MED4

<400> 156

Leu Glu Leu Pro Leu Asp His Phe Arg Leu Ile Gly Val Ser Pro Ser
 1 5 10 15

Ala Thr Ser Glu Glu Ile Leu Arg Ala Phe Gln Leu Arg Leu Asp Lys
 20 25 30

Thr Pro Asp Glu Gly Phe Thr Tyr Glu Val Leu Thr Gln Arg Ser Glu
 35 40 45

Leu Leu Arg Leu Thr Ala Asp Leu Leu Thr Asp Pro Asp Ser Arg Arg
 50 55 60

Asp Tyr Glu Asn Leu Leu Leu Asn Gly Ala Ser Gly Leu Asp Leu Ser
 65 70 75 80

Ser Asn Arg Glu Val Ala Gly Leu Ile Leu Leu Trp Glu Ser Gly Ser
 85 90 95

Ser Lys Glu Ala Phe Lys Ile Thr Arg Lys Ala Leu Gln Pro Pro Gln
 100 105 110

Thr Pro Ala Leu Gly Ser Ser Arg Glu Ala Asp Leu Thr Leu Leu Ala
 115 120 125

Ala Leu Thr Ser Arg Asp Ala Ala Ile Gln Glu Gln Asp Gln Arg Ser
 130 135 140

Tyr Ser Asn Ala Ala Asp Phe Leu Gln Glu Gly Ile Gln Leu Leu Gln
 145 150 155 160

Arg Met Gly Lys Leu Gly Glu Leu Arg Lys Thr Leu Glu Glu Asp Leu
 165 170 175

Val Ser Leu Leu Pro Tyr Arg Ile Leu Asp Leu Leu Ser Arg Asp Leu
 180 185 190

Asn Asp Tyr Asp Ser His Lys Lys Gly Leu Ser Met Leu Glu Asn Leu
 195 200 205

Ile Ile Lys Arg Gly Gly Leu Glu Gly Lys Asn Lys Ser Glu Tyr Asn
 210 215 220

Asp Phe Leu Asn Gln Gln Glu Phe Glu Ser Phe Phe Gln Gln Ile Lys
 225 230 235 240

Pro Phe Leu Thr Val Gln Asp Gln Ile Asp Leu Phe Leu Glu Leu Gln
 245 250 255

Lys Arg Gly Ser Ser Glu Ala Gly Phe Leu Ala Phe Leu Ser Leu Thr
 260 265 270

Ala Ile Gly Phe Ala Arg Arg Lys Pro Ala Lys Leu Phe Glu Ala Arg
 275 280 285

Lys Ile Leu Lys Lys Leu Asn Leu Ser Gly Leu Asp Ser Met Pro Leu
 290 295 300

Ile	Gly	Cys	Leu	Asp	Leu	Leu	Leu	Ala	Asp	Val	Glu	Gln	Ser	Ser	Ala	305	310	315	320
Arg	Phe	Leu	Ser	Ser	Ser	Asp	Glu	Lys	Leu	Arg	Asp	Trp	Leu	Asn	Asn	325	330	335	
Tyr	Pro	Gly	Glu	Lys	Leu	Glu	Ala	Ile	Cys	Ile	Phe	Cys	Lys	Asn	Trp	340	345	350	
Leu	Glu	Asn	Asp	Val	Leu	Val	Gly	Tyr	Arg	Asp	Ile	Asp	Leu	Lys	Glu	355	360	365	
Ile	Asp	Leu	Asp	Ser	Trp	Phe	Glu	Asp	Arg	Glu	Ile	Gln	Glu	Phe	Ile	370	375	380	
Glu	Gln	Ile	Glu	Lys	Lys	Ser	Asn	Arg	Thr	Val	Phe	Lys	Ser	Gly	Pro	385	390	395	400
Gln	Asn	Lys	Pro	Ile	Phe	Gln	Ala	Gln	Glu	Ser	Leu	Lys	Asp	Ser	Ser	405	410	415	
Thr	Gly	Pro	Asp	Leu	Asn	Ser	Asp	Asn	Phe	Glu	Glu	Gly	Arg	Leu	Pro	420	425	430	
Leu	Pro	Gly	Gly	Val	Arg	Glu	Asp	Gly	Gln	Glu	Val	Ile	Glu	Glu	Asn	435	440	445	
Ile	Tyr	Thr	Asp	Glu	Ile	Ile	Lys	Asn	Lys	Ser	Ile	Glu	Phe	Tyr	Lys	450	455	460	
Tyr	Ala	Ile	Glu	Lys	Ile	Ala	Glu	Leu	Lys	Phe	Val	Phe	Gly	Glu	Ala	465	470	475	480
Leu	Glu	Asn	Tyr	Arg	Ile	Phe	Asn	Lys	Ser	Ser	Tyr	Leu	Thr	Tyr	Leu	485	490	495	
Tyr	Ala	Phe	Leu	Ile	Leu	Phe	Ala	Phe	Gly	Leu	Gly	Val	Gly	Phe	Val	500	505	510	
Arg	Asn	Asn	Leu	Lys	Lys	Pro	Val	Gln	Glu	Lys	Glu	Ile	Ile	Asp	Asn	515	520	525	
Ser	Leu	Ser	Ile	Asn	Glu	Asn	Lys	Asn	Val	Phe	Tyr	Glu	Gly	Leu	Asn	530	535	540	

Gln Asp Asp Lys Lys Lys Val Leu Asp Asn Ser Lys Ile Ile Leu Ser
 545 550 555 560

Asp Asn Ala Glu Lys Val Ile Phe Ser Gly Glu Glu Ile Lys Thr Ala
 565 570 575

Ser Pro Ser Leu Glu Lys Ile Glu Asn Leu Ile Asn Thr Trp Leu Val
 580 585 590

Asn Lys Ser Lys Phe Leu Ala Gly Lys Gly Glu Ile Asn Leu Ser Lys
 595 600 605

Ile Val Gln Asp Asp Leu Ile Asp Arg Leu Lys Lys Glu Arg Glu Leu
 610 615 620

Asp Ile Gln Lys Gly Ile Tyr Lys Asn Ile Asn Ala Asn Ile Glu Asn
 625 630 635 640

Ile Val Leu Leu Thr Gln Thr Ala Ser Arg Ile Ser Val Ser Val Asp
 645 650 655

Leu Lys Tyr Ser Glu Lys Ile Leu Lys Ile Asp Gly Glu Leu Ile Asn
 660 665 670

Glu Thr Thr Phe Thr Pro Phe Leu Lys Val Lys Tyr Ile Leu Gly Phe
 675 680 685

Ser Asn Asn Ser Trp Lys Leu Val Asp Tyr Ile Ser Gly Val
 690 695 700

<210> 157
 <211> 1986
 <212> DNA
 <213> *Protochlorococcus marinus* MT9313

<400> 157
 gtggacctgc caatagatca tttccgcttg ctgggtgtca gtccttcggc agacagtgag 60
 gcgattttgc gggccttgga gttgaggttg gatcgctgcc ctgaccaagg tttcacccat 120
 gaggtcttaa ttcagcgggc agaattgttg cggctttcag cagatttgct gactgatccg 180
 ccacggcgtc aggcctatga gactgccttg ttggagctca gtcgtgatca tccaggtgag 240
 accgccggtc ttgatgtgtc acctagtaga gaggtggcag ggctgatctt gctgtttgaa 300
 gcgaattctt ctcattgaggt ttttcatttc gcctctcagg gattgcaacc gcccagtgcc 360

ccgacgctag gtagcgaacg agaagctgac ctgcgtttgt tggtggcact ggcctgtcgg	420
gctgcagccg ctgaggaaca ggaacaacgg cgttatgaag cagcagcgtc tcttctgcat	480
gacgggatcc agttgctgca gcggatgggc aagctctccg aagagtgccca caagcttgag	540
aacgatttag atgcccttct gccctatcgc attctcgact tattgagtcg ggatcttggt	600
gatcaggttt ctcaccagga aggactgcgc ctacttgaca actttgtgag ccagagagga	660
ggctcttgagg gaacggcccc atcgctgca cctgggtggc ttgatcagtc cgaatttgac	720
aacttcttca agcagatcag aaagttttta actgttcagg aacaggttga tcttttcctg	780
cgctggcagc aagccggatc agcagatgcg ggtttcctgg gtgggttggc tcttgctgct	840
gttggtttt cgctcggaa gcctgaacgg gtgcaggaag ctggcgagca cttagagagg	900
cttcaactgg atggatgca cccgttgccg atgctgggtt gcttggaacct cttgctcgga	960
gatgtgggcc gcgctcagga gcgttttctg cgcagtacag atcctcgagt gaaggactgt	1020
cttaacagcc accctggcga tgaattggct gctttttgtg agtactgccg ctcttggtg	1080
cgaggggacg tgcttcccgg ttatagggat gtggatgctg aggccgttga tctagaggct	1140
tggtttgctg atcgggatgt tcaggcttat gtggagcgcc tggaaacgcag cgaaaatcgt	1200
gcttcttctt taggtaaggc cttctcagga tcgtctgtga agcaaccctt cccttgggcg	1260
cctcttgatc ccgatgggat tttgcccctc tctcttggtg ggcctgatgt tgggtcaacct	1320
gcagctgac agagctctga tgagtttgcc agcgatggta tggcatggat tgatcgttta	1380
gcagatctgc cacgcccagc gcggccggtg ctgatcggtt cggttgtctt tgccggccctg	1440
attgcagcct ttgcaggctt cagtttgttt ggccaacgtc ctcgtaacgtc agttagtacg	1500
gctgctgac agcctcaagt cacagcacct cctacagcca cactgcaaga ggaggtcctc	1560
atgcctcaag tccctgtcag cgctgtgggt gagccgctta ctttgagca gccgaatgag	1620
gcacagctca aaggcctgct tcaggcctgg ctacagcaaca aggcagtcgt gcttgccggt	1680
ggcaagagt atgcactgcc tgaggtcgca agagatccat tgggtgcagcg cgtggcgcaa	1740
gagcgtgcc gggatgctgc tttagctcag acccagaagg ttgtggccag catcagctct	1800
gtagagggtg tgagtcgaac gccgcagcg attgagctga atgccgttgt gacctatcgc	1860
gatcaacgcg ttgatgctgc cggcaagggt gttgaccaa cgccccaaaa agatctctcg	1920
gtgacttaca tccttggtcg tgatcccgat cgttggcgcc tgcataaata catcagcggc	1980
aaataa	1986

<210> 158
 <211> 661
 <212> PRT
 <213> Protochlorococcus marinus MT9313

<400> 158

Val Asp Leu Pro Ile Asp His Phe Arg Leu Leu Gly Val Ser Pro Ser
 1 5 10 15

Ala Asp Ser Glu Ala Ile Leu Arg Ala Leu Glu Leu Arg Leu Asp Arg
 20 25 30

Cys Pro Asp Gln Gly Phe Thr His Glu Val Leu Ile Gln Arg Ala Glu
 35 40 45

Leu Leu Arg Leu Ser Ala Asp Leu Leu Thr Asp Pro Pro Arg Arg Gln
 50 55 60

Ala Tyr Glu Thr Ala Leu Leu Glu Leu Ser Arg Asp His Pro Gly Glu
 65 70 75 80

Thr Ala Gly Leu Asp Val Ser Pro Ser Arg Glu Val Ala Gly Leu Ile
 85 90 95

Leu Leu Phe Glu Ala Asn Ser Ser His Glu Val Phe His Leu Ala Ser
 100 105 110

Gln Gly Leu Gln Pro Pro Gln Ser Pro Thr Leu Gly Ser Glu Arg Glu
 115 120 125

Ala Asp Leu Ala Leu Leu Leu Ala Leu Ala Cys Arg Ala Ala Ala Ala
 130 135 140

Glu Glu Gln Glu Gln Arg Arg Tyr Glu Ala Ala Ala Ser Leu Leu His
 145 150 155 160

Asp Gly Ile Gln Leu Leu Gln Arg Met Gly Lys Leu Ser Glu Glu Cys
 165 170 175

His Lys Leu Glu Asn Asp Leu Asp Ala Leu Leu Pro Tyr Arg Ile Leu
 180 185 190

Asp Leu Leu Ser Arg Asp Leu Gly Asp Gln Val Ser His Gln Glu Gly
 195 200 205

Leu Arg Leu Leu Asp Asn Phe Val Ser Gln Arg Gly Gly Leu Glu Gly
 210 215 220
 Thr Ala Pro Ser Pro Ala Pro Gly Gly Leu Asp Gln Ser Glu Phe Asp
 225 230 235 240
 Asn Phe Phe Lys Gln Ile Arg Lys Phe Leu Thr Val Gln Glu Gln Val
 245 250 255
 Asp Leu Phe Leu Arg Trp Gln Gln Ala Gly Ser Ala Asp Ala Gly Phe
 260 265 270
 Leu Gly Gly Leu Ala Leu Ala Ala Val Gly Phe Ser Arg Arg Lys Pro
 275 280 285
 Glu Arg Val Gln Glu Ala Arg Gln His Leu Glu Arg Leu Gln Leu Asp
 290 295 300
 Gly Cys Asp Pro Leu Pro Met Leu Gly Cys Leu Asp Leu Leu Leu Gly
 305 310 315 320
 Asp Val Gly Arg Ala Gln Glu Arg Phe Leu Arg Ser Thr Asp Pro Arg
 325 330 335
 Val Lys Asp Cys Leu Asn Ser His Pro Gly Asp Glu Leu Ala Ala Phe
 340 345 350
 Cys Glu Tyr Cys Arg Ser Trp Leu Arg Gly Asp Val Leu Pro Gly Tyr
 355 360 365
 Arg Asp Val Asp Ala Glu Ala Val Asp Leu Glu Ala Trp Phe Ala Asp
 370 375 380
 Arg Asp Val Gln Ala Tyr Val Glu Arg Leu Glu Arg Ser Glu Asn Arg
 385 390 395 400
 Ala Ser Ser Leu Gly Lys Ala Phe Ser Gly Ser Ser Val Lys Gln Pro
 405 410 415
 Phe Pro Trp Ala Pro Leu Asp Pro Asp Gly Ile Leu Pro Leu Ser Leu
 420 425 430
 Gly Gly Pro Asp Val Gly Gln Pro Ala Ala Asp Gln Ser Ser Asp Glu
 435 440 445

Phe Ala Ser Asp Gly Met Ala Trp Ile Asp Arg Leu Ala Asp Leu Pro
 450 455 460

Arg Pro Thr Arg Pro Val Leu Ile Gly Ser Val Val Phe Ala Ala Leu
 465 470 475 480

Ile Ala Ala Phe Ala Gly Phe Ser Leu Phe Gly Gln Arg Pro Arg Thr
 485 490 495

Ser Val Ser Thr Ala Ala Asp Gln Pro Gln Val Thr Ala Pro Pro Thr
 500 505 510

Ala Thr Leu Gln Glu Glu Val Leu Met Pro Gln Val Pro Val Ser Ala
 515 520 525

Val Val Glu Pro Leu Thr Leu Glu Gln Pro Asn Glu Ala Gln Leu Lys
 530 535 540

Gly Leu Leu Gln Ala Trp Leu Ser Asn Lys Ala Val Val Leu Ala Gly
 545 550 555 560

Gly Lys Ser Asp Ala Leu Pro Glu Val Ala Arg Asp Pro Leu Val Gln
 565 570 575

Arg Val Ala Gln Glu Arg Ala Arg Asp Ala Ala Leu Ala Gln Thr Gln
 580 585 590

Lys Val Val Ala Ser Ile Ser Ser Val Glu Val Val Ser Arg Thr Pro
 595 600 605

Gln Arg Ile Glu Leu Asn Ala Val Val Thr Tyr Arg Asp Gln Arg Val
 610 615 620

Asp Ala Ala Gly Lys Val Val Asp Gln Thr Pro Gln Lys Asp Leu Ser
 625 630 635 640

Val Thr Tyr Ile Leu Gly Arg Asp Pro Asp Arg Trp Arg Leu His Glu
 645 650 655

Tyr Ile Ser Gly Lys
 660

<210> 159
 <211> 2151
 <212> DNA
 <213> Synechococcus PCC7002

<400> 159
 gtgcgcattc cgctcgacta ttaccgcata ctatgcgtcc ccgccaaggc aaccactgcc 60
 caaattaccc aagcctatcg cgatcgccctc tcccaatttc cccgtcgcga acataatgcc 120
 ttggccattg aggcccgcaa ccggattatc gagcaagcct ttgaggtgtt atcccaaaca 180
 gaaaccgcgc ccgtctacga ccatgagctg tcgggcaata tgtttcgttc cctcgtcccc 240
 agccgtccga aactgccttt tcccgatcgc cctccagtg acacagagtt agaagccctg 300
 acagcccacc aaccaaccat tgacatcgcg gaaaaagatt tactgggggg actgctgtta 360
 ctctctgacc tgggggagta cgaattagtg ctgaagtggg ctgcccccta cctcaagggc 420
 aaaggcaagc tgggtcaagga agggaaattt ggggccgtcg aaatcgtcga gcaagaacta 480
 cggttttgtt tggccctggc ccaactggga ttgagccggg aacagtggct ccaacaacat 540
 tatgaacagg cggtctcttc cggtcagaag agtcaagagc tattggtaga tgtggcacia 600
 tttgcagacc tccaacagga aattcaaggg gatctcaatc gcctcagacc ctatcaagtt 660
 ctagaacttc tggccctacc cgaatcagaa acccaagagc gacaacgggg cttacaactg 720
 ctccaggaaa tgttgagtgc tcgctggggg attgatggcc agggggacga tcagtcgggt 780
 ctaagtattg atgatttttt gcgctttatc cagcagttac gcagttatct aacggtgcaa 840
 gaacagttgg atctctttgt ggcagaatca aagcgacctt cggcggcagc ggcctaccta 900
 gcggtgtatg ctctcttggc tgetgggttt tcgcaacgga aacctgacct ggtcgtgcaa 960
 gccagaccc tattaaaacg cctcggaaca cgccaggatg ttttcttggg gcaatcaatc 1020
 tgcgccttac ttttaggtca gccgtcgga gccaatcaac tgtagaaca aagtcaggaa 1080
 caggaggcga tcgcctacat tcaagagcag tctgaggggg caccggatct actcccaggc 1140
 ctatgtctct acggggaaca gtggctgaag acagagggtt tttccattt ccgcgatctc 1200
 cggcaacggc ttgaagatgg ctctgtttcg ttgacggctt acttcgccga tcctgaagtg 1260
 cagcaatatc ttgacgatct cctcacggag gctgtcccca caccacacc acatccagac 1320
 acagaaagta cagcggcccc gtcggaaaag ccaccggaaa cattacagtc agaaaccggt 1380
 gtttcgccgc atcccagtcg tcccgccaag gttgattcct ttgaggatct cgtcactcaa 1440
 actcccgcta cagttcccc ggcaccgct tctcctggtg tagcacctgt aactgcggca 1500
 ttaaaccag acccggaagc gtcttctgct tcgtcaaaat cagtttcgtc aaaaaagtct 1560

```

atcgggcctt ggggggcat cgccgctatc gtggggagtg ttttgctggt cgtgggcctg 1620
gtgcgaattt tgtctggcct aactaccag gaacccttac aggtcaccct caacggtgag 1680
ccaccctaa cgatccccag cttagacacc gccgaggcaa ataataatcc ggagaatgga 1740
gcgaccgata caacgacaac gcctgcgctc aatgaggcga tcgccgctga ggtgattcaa 1800
acttggtttg agagtaaagc tagagccttt ggccaagacc gtgatttggc ggctctagaa 1860
aatattttgg cagaaccgtc cctgtccgc tggcgcagta gtgccaggc cgtccgcagc 1920
gctggtacct accgcaccta tgaccacagt ttgaccattg aaacggtgag cttcaacca 1980
gaccaacca atgtggcgac cgttgaggcc caggcgcagg aaaaggcaga ttattaccgg 2040
gcgaatgggg aacgcgatcc cggccagtcc tatgattctg acctgcgtgt ccgctacagc 2100
ttggtgcgcc aaggcgatcg ctggttgatt cgttcttccc aaaccctgta a 2151

```

```

<210> 160
<211> 716
<212> PRT
<213> Synechococcus PCC7002

```

```

<400> 160

```

```

Met Arg Ile Pro Leu Asp Tyr Tyr Arg Ile Leu Cys Val Pro Ala Lys
1           5           10           15

```

```

Ala Thr Thr Ala Gln Ile Thr Gln Ala Tyr Arg Asp Arg Leu Ser Gln
20           25           30

```

```

Phe Pro Arg Arg Glu His Asn Ala Leu Ala Ile Glu Ala Arg Asn Arg
35           40           45

```

```

Ile Ile Glu Gln Ala Phe Glu Val Leu Ser Gln Thr Glu Thr Arg Ala
50           55           60

```

```

Val Tyr Asp His Glu Leu Ser Gly Asn Met Phe Arg Ser Leu Val Pro
65           70           75           80

```

```

Ser Arg Pro Lys Leu Pro Phe Pro Asp Arg Pro Ser Ser Asp Thr Glu
85           90           95

```

```

Leu Glu Ala Leu Thr Ala His Gln Pro Thr Ile Asp Ile Ala Glu Lys
100          105          110

```

```

Asp Leu Leu Gly Gly Leu Leu Leu Leu Leu Asp Leu Gly Glu Tyr Glu
115          120          125

```

Leu Val Leu Lys Trp Ala Ala Pro Tyr Leu Lys Gly Lys Gly Lys Leu
 130 135 140
 Val Lys Glu Gly Lys Phe Gly Ala Val Glu Ile Val Glu Gln Glu Leu
 145 150 155 160
 Arg Leu Cys Leu Ala Leu Ala His Trp Glu Leu Ser Arg Glu Gln Trp
 165 170 175
 Leu Gln Gln His Tyr Glu Gln Ala Ala Leu Ser Gly Gln Lys Ser Gln
 180 185 190
 Glu Leu Leu Val Asp Val Ala Gln Phe Ala Asp Leu Gln Gln Glu Ile
 195 200 205
 Gln Gly Asp Leu Asn Arg Leu Arg Pro Tyr Gln Val Leu Glu Leu Leu
 210 215 220
 Ala Leu Pro Glu Ser Glu Thr Gln Glu Arg Gln Arg Gly Leu Gln Leu
 225 230 235 240
 Leu Gln Glu Met Leu Ser Ala Arg Val Gly Ile Asp Gly Gln Gly Asp
 245 250 255
 Asp Gln Ser Gly Leu Ser Ile Asp Asp Phe Leu Arg Phe Ile Gln Gln
 260 265 270
 Leu Arg Ser Tyr Leu Thr Val Gln Glu Gln Leu Asp Leu Phe Val Ala
 275 280 285
 Glu Ser Lys Arg Pro Ser Ala Ala Ala Tyr Leu Ala Val Tyr Ala
 290 295 300
 Leu Leu Ala Ala Gly Phe Ser Gln Arg Lys Pro Asp Leu Val Val Gln
 305 310 315 320
 Ala Gln Thr Leu Leu Lys Arg Leu Gly Lys Arg Gln Asp Val Phe Leu
 325 330 335

Glu	Gln	Ser	Ile	Cys	Ala	Leu	Leu	Leu	Gly	Gln	Pro	Ser	Glu	Ala	Asn	340	345	350
Gln	Leu	Leu	Glu	Gln	Ser	Gln	Glu	Gln	Glu	Ala	Ile	Ala	Tyr	Ile	Gln	355	360	365
Glu	Gln	Ser	Glu	Gly	Ala	Pro	Asp	Leu	Leu	Pro	Gly	Leu	Cys	Leu	Tyr	370	375	380
Gly	Glu	Gln	Trp	Leu	Lys	Thr	Glu	Val	Phe	Ser	His	Phe	Arg	Asp	Leu	385	390	395
Arg	Gln	Arg	Leu	Glu	Asp	Gly	Ser	Val	Ser	Leu	Thr	Ala	Tyr	Phe	Ala	405	410	415
Asp	Pro	Glu	Val	Gln	Gln	Tyr	Leu	Asp	Asp	Leu	Leu	Thr	Glu	Ala	Val	420	425	430
Pro	Thr	Pro	Thr	Pro	His	Pro	Asp	Thr	Glu	Ser	Thr	Ala	Ala	Pro	Ser	435	440	445
Glu	Lys	Pro	Pro	Glu	Thr	Leu	Gln	Ser	Glu	Thr	Gly	Val	Ser	Pro	His	450	455	460
Pro	Ser	Arg	Pro	Ala	Lys	Val	Asp	Ser	Phe	Glu	Asp	Leu	Val	Thr	Gln	465	470	475
Thr	Pro	Ala	Thr	Val	Pro	Pro	Ala	Pro	Pro	Ser	Pro	Gly	Val	Ala	Pro	485	490	495
Val	Thr	Ala	Ala	Leu	Asn	Pro	Asp	Pro	Glu	Ala	Ser	Ser	Ala	Ser	Ser	500	505	510
Lys	Ser	Val	Ser	Ser	Lys	Lys	Ser	Ile	Gly	Pro	Trp	Gly	Ala	Ile	Ala	515	520	525
Ala	Ile	Val	Gly	Ser	Val	Leu	Leu	Val	Val	Gly	Leu	Val	Arg	Ile	Leu	530	535	540
Ser	Gly	Leu	Thr	Thr	Gln	Glu	Pro	Leu	Gln	Val	Thr	Leu	Asn	Gly	Glu	545	550	555
																		560

Pro Pro Leu Thr Ile Pro Ser Leu Asp Thr Ala Glu Ala Asn Asn Asn
565 570 575

Pro Glu Asn Gly Ala Thr Asp Thr Thr Thr Thr Pro Ala Leu Asn Glu
580 585 590

Ala Ile Ala Ala Glu Val Ile Gln Thr Trp Phe Glu Ser Lys Ala Arg
595 600 605

Ala Phe Gly Gln Asp Arg Asp Leu Ala Ala Leu Glu Asn Ile Leu Ala
610 615 620

Glu Pro Ser Leu Ser Arg Trp Arg Ser Ser Ala Gln Ala Val Arg Ser
625 630 635 640

Ala Gly Thr Tyr Arg Thr Tyr Asp His Ser Leu Thr Ile Glu Thr Val
645 650 655

Ser Phe Asn Pro Asp Gln Pro Asn Val Ala Thr Val Glu Ala Gln Val
660 665 670

Gln Glu Lys Ala Asp Tyr Tyr Arg Ala Asn Gly Glu Arg Asp Pro Gly
675 680 685

Gln Ser Tyr Asp Ser Asp Leu Arg Val Arg Tyr Ser Leu Val Arg Gln
690 695 700

Gly Asp Arg Trp Leu Ile Arg Ser Ser Gln Thr Leu
705 710 715

<210> 161
<211> 2469
<212> DNA
<213> Synechococcus PCC7942

<400> 161
cttgccgact aaaggctaag catcgccatt ccttagatta aagcagtctg tcggcggcgc 60
tgtgccggtt aacaccagtc tgctgctgac agcgggtgct ttctggggct tgcctgtggg 120
gcgagtaacc gatcgctggg ataagagttg gtgcttcttg ctctcaagaa tagggttttc 180
cgtcgcgtat tcccgatcac atccccctgt gtctgctacg gagataacgc cgatcactca 240
acagaattgg taagttgacg gtcaagttgg gatgatgaag tcggctcaag ctggcgatcc 300
ggatctggtg ggtgttctgt gcgtattcct ctogattact accgaattct ctgtgttggc 360

gtgcaagcct	cggcagacaa	acttgccgaa	agctaccgcg	atcgccctcaa	ccaatcgccc	420
tcccatgagt	tttcagagct	ggcattgcag	gcgcggcggc	aactcctcga	agcagcgatt	480
gctgagctga	gtgatccccga	acagcgcgat	cgctacgata	gccgcttttt	tcagggcggt	540
ctggaagcga	ttgaaccaag	cctagaactc	gaagactggc	agcgaattgg	agccctgctg	600
atcctgctgg	aattggggga	atacgatcgc	gtttcgcaac	tggctgagga	actcctgcca	660
gactacgacg	cgagcgcaga	agtacgcgat	cagttcgcgc	ggggtgatata	cgccttggcg	720
atcgactat	cccagcaatc	cctcggtcga	gaatgccgtc	agcagggctct	gtacgaacag	780
gccgcccagc	actttggccg	cagccagtct	gccctagccg	atcatcagcg	ctttcctgaa	840
ctgagtcgaa	ccctgcacca	agaacaagga	cagctacggc	cctatcgcat	tttgagcggt	900
ttggcccagc	ccttgactgc	cgatagcgat	cgccagcagg	gtttgctggt	gttgaggcg	960
atgttgagcg	accggcaggg	cattgaaggc	cctggggatg	atggctcggg	gctgaccctt	1020
gataactttt	tgatgtttct	ccagcaaatt	cgcggtatc	tgaccctggc	tgaacagcag	1080
ttgctgtttg	aatcggaagc	gcgtcggccc	tcgccggctg	cgagcttttt	tgctgctac	1140
accctgattg	cgcggggctt	ttgcgatcac	caaccctcgt	tgatccatcg	cgccagcttg	1200
ctcttgcatg	aactcaagag	ccgcatggat	gtgcacatcg	aacaggcgat	cgccagccta	1260
ttgctcggac	agcccgaaga	agctgaggcg	ctactcgtcc	agagccaaga	tgaggaaacc	1320
ctcagccaaa	tccgtgccct	agcccaaggg	gaagccctga	tcgtcggttt	gtgccgattc	1380
acggaaacct	ggctagcgac	caaggatatt	ccggatttcc	gcgacctcaa	ggaaaggact	1440
gcgcgcctgc	agccctactt	tgacgacccc	gatgtccaga	cctatctgga	tgcgatcgtg	1500
gagttgccgt	ccgatttgat	gccaacgccg	ctaccgcttg	agccgcttga	ggtgcgatcg	1560
tcgttgctgg	ccaaggaact	gccgacccca	gcaacgcctg	gtgtagctcc	acccctcgc	1620
cgcgcgcgc	gcgatcgctc	cgaacgtcct	gctcgcacgg	ccaaacgctt	gcccttgccc	1680
tggattgggt	tgggggttgt	ggtggttctc	ggcgggtgga	caggggtttg	ggcttggcga	1740
tcgcgttcca	attccacccc	gccgaccccg	ccccccgtgg	ttcaaacgct	gcctgaggcg	1800
gtacctgccc	cttcgcccgc	gccagttacc	gttgccctcg	atcgggctca	ggctgaaact	1860
gtgttgcaaa	actggttggc	cgctaaagct	gcagccttgg	ggcctcaata	cgatcgcgat	1920
cgttagcgga	cgggtgctgac	cggtgagggt	ctgcagactt	ggcagggttt	ttctagccag	1980
caggccaaca	cccagctcac	atcacagttc	gatcacaagt	taaccgtcga	ctcagttcag	2040
ctcagtgcgc	gtgatcaacg	agcagtagtc	caagccaagg	tcgatgaagt	tgagcaggtc	2100

tatcgaggcg accagctgct cgaaacgcgc cgagatttgg gcttggtgat ccgctaccag 2160
ctcgtgcgcg agaacaacat ctggaaaatt gcttcgatta gtttggtgcg ctaggaattc 2220
gcaaggggtg aacccctgc ggtcttttct gtagatcccc tagagcgatc gcagaatgtt 2280
cagcgattcc tggatgtgcg cttgggcatt caagagtga tcaaaaatgt ggcgcacctt 2340
gccctctttg tcgatcacat aagtgcgcg acccggaatc acaaacaggg ttttgggcac 2400
gccatagggt tgacggaggc gatcgctgc atcgctcagc agttggaagg gcaagttgta 2460
tttctgggc 2469

<210> 162
<211> 631
<212> PRT
<213> Synechococcus PCC7942

<400> 162

Met Arg Ile Pro Leu Asp Tyr Tyr Arg Ile Leu Cys Val Gly Val Gln
1 5 10 15

Ala Ser Ala Asp Lys Leu Ala Glu Ser Tyr Arg Asp Arg Leu Asn Gln
20 25 30

Ser Pro Ser His Glu Phe Ser Glu Leu Ala Leu Gln Ala Arg Arg Gln
35 40 45

Leu Leu Glu Ala Ala Ile Ala Glu Leu Ser Asp Pro Glu Gln Arg Asp
50 55 60

Arg Tyr Asp Arg Arg Phe Phe Gln Gly Gly Leu Glu Ala Ile Glu Pro
65 70 75 80

Ser Leu Glu Leu Glu Asp Trp Gln Arg Ile Gly Ala Leu Leu Ile Leu
85 90 95

Leu Glu Leu Gly Glu Tyr Asp Arg Val Ser Gln Leu Ala Glu Glu Leu
100 105 110

Leu Pro Asp Tyr Asp Ala Ser Ala Glu Val Arg Asp Gln Phe Ala Arg
115 120 125

Gly Asp Ile Ala Leu Ala Ile Ala Leu Ser Gln Gln Ser Leu Gly Arg
130 135 140

Glu	Cys	Arg	Gln	Gln	Gly	Leu	Tyr	Glu	Gln	Ala	Ala	Gln	His	Phe	Gly	145	150	155	160
Arg	Ser	Gln	Ser	Ala	Leu	Ala	Asp	His	Gln	Arg	Phe	Pro	Glu	Leu	Ser	165	170		175
Arg	Thr	Leu	His	Gln	Glu	Gln	Gly	Gln	Leu	Arg	Pro	Tyr	Arg	Ile	Leu	180	185		190
Glu	Arg	Leu	Ala	Gln	Pro	Leu	Thr	Ala	Asp	Ser	Asp	Arg	Gln	Gln	Gly	195	200		205
Leu	Leu	Leu	Leu	Gln	Ala	Met	Leu	Asp	Asp	Arg	Gln	Gly	Ile	Glu	Gly	210	215		220
Pro	Gly	Asp	Asp	Gly	Ser	Gly	Leu	Thr	Leu	Asp	Asn	Phe	Leu	Met	Phe	225	230	235	240
Leu	Gln	Gln	Ile	Arg	Gly	Tyr	Leu	Thr	Leu	Ala	Glu	Gln	Gln	Leu	Leu	245	250		255
Phe	Glu	Ser	Glu	Ala	Arg	Arg	Pro	Ser	Pro	Ala	Ala	Ser	Phe	Phe	Ala	260	265		270
Cys	Tyr	Thr	Leu	Ile	Ala	Arg	Gly	Phe	Cys	Asp	His	Gln	Pro	Ser	Leu	275	280		285
Ile	His	Arg	Ala	Ser	Leu	Leu	Leu	His	Glu	Leu	Lys	Ser	Arg	Met	Asp	290	295	300	
Val	His	Ile	Glu	Gln	Ala	Ile	Ala	Ser	Leu	Leu	Leu	Gly	Gln	Pro	Glu	305	310	315	320
Glu	Ala	Glu	Ala	Leu	Leu	Val	Gln	Ser	Gln	Asp	Glu	Glu	Thr	Leu	Ser	325	330		335
Gln	Ile	Arg	Ala	Leu	Ala	Gln	Gly	Glu	Ala	Leu	Ile	Val	Gly	Leu	Cys	340	345		350
Arg	Phe	Thr	Glu	Thr	Trp	Leu	Ala	Thr	Lys	Val	Phe	Pro	Asp	Phe	Arg	355	360		365
Asp	Leu	Lys	Glu	Arg	Thr	Ala	Pro	Leu	Gln	Pro	Tyr	Phe	Asp	Asp	Pro	370	375	380	

Asp Val Gln Thr Tyr Leu Asp Ala Ile Val Glu Leu Pro Ser Asp Leu
 385 390 395 400

Met Pro Thr Pro Leu Pro Val Glu Pro Leu Glu Val Arg Ser Ser Leu
 405 410 415

Leu Ala Lys Glu Leu Pro Thr Pro Ala Thr Pro Gly Val Ala Pro Pro
 420 425 430

Pro Arg Arg Arg Arg Arg Asp Arg Ser Glu Arg Pro Ala Arg Thr Ala
 435 440 445

Lys Arg Leu Pro Leu Pro Trp Ile Gly Leu Gly Val Val Val Val Leu
 450 455 460

Gly Gly Gly Thr Gly Val Trp Ala Trp Arg Ser Arg Ser Asn Ser Thr
 465 470 475 480

Pro Pro Thr Pro Pro Pro Val Val Gln Thr Leu Pro Glu Ala Val Pro
 485 490 495

Ala Pro Ser Pro Ala Pro Val Thr Val Ala Leu Asp Arg Ala Gln Ala
 500 505 510

Glu Thr Val Leu Gln Asn Trp Leu Ala Ala Lys Ala Ala Ala Leu Gly
 515 520 525

Pro Gln Tyr Asp Arg Asp Arg Leu Ala Thr Val Leu Thr Gly Glu Val
 530 535 540

Leu Gln Thr Trp Gln Gly Phe Ser Ser Gln Gln Ala Asn Thr Gln Leu
 545 550 555 560

Thr Ser Gln Phe Asp His Lys Leu Thr Val Asp Ser Val Gln Leu Ser
 565 570 575

Asp Gly Asp Gln Arg Ala Val Val Gln Ala Lys Val Asp Glu Val Glu
 580 585 590

Gln Val Tyr Arg Gly Asp Gln Leu Leu Glu Thr Arg Arg Asp Leu Gly
 595 600 605

Leu Val Ile Arg Tyr Gln Leu Val Arg Glu Asn Asn Ile Trp Lys Ile
610 615 620

Ala Ser Ile Ser Leu Val Arg
625 630

<210> 163

<211> 2400

<212> DNA

<213> Anabaena PCC7120

<400> 163

```
attatgttga tcacggtgca ggggaagtac gctgtgcgaa ttccgctaga ttactaccga      60
attttagggc taccgttagc ggcaagtgat gaacaactgc gacaagcata cagcgatcgc      120
attgtccaat tgccgcgacg ggagtattct caagcagcaa ttgcttcccg taaacaactt      180
atagaagaag cttacgtggt tttatcagat ccaaaggaac gcagcagtta tgaccagctg      240
tatcttgctc acgcctacga cccagacaac gcggtacaaa ccaaagtggc agtggaaaat      300
cgtgggggaca gcaacaatgg tcatttcgat gtccaaagcc tgagcatcga agtttcctcc      360
gaggaattaa ttggtgcttt attaatTTTg caagagttgg gagagtatga actcgactc      420
aagttaggtc gtaattactt aggtaatcaa aacggcacag catccaccag aaatggcaat      480
catcgcacgc ctgaagaatt tctcgatagt tctgaacgtc cagatattct cttgactggt      540
gctttggcct cattagaatt agggcgggaa caatggcaac aaggccacta tgaaaacgct      600
gctttgtctt tagagactgg gcaagaagtg ctgttttagtg aaggcatctt cccagcgtc      660
caggcagaaa ttcaggctga tctttacaaa ttacgccctt atagaatttt agaattactt      720
gccttacccc aggaaaaaac cattgaacgc caccaagggc tggatctatt acaaagcatc      780
ttagacgata gcggtggcat tgatggtaca ggcaatgatc aatcaggctt aaacattgat      840
gacttcctcc gattcatcca gcaattacgc caccacttaa cagtggctga acaacataag      900
ttgtttgatg gtgaaagcaa acgcccttcg gctgtggcta catacttagc tgtttatgct      960
tccatcgcca gaggattcac ccaacgccag cccgctttaa ttcgtcatgc caagcaaatt     1020
ctgatgcggt tgtctaagcg gcaagatgtg catttagagc agtccctgtg tgcgctatta     1080
ctagggcaaa ctgaagaagc cacgcgagtt ttagaactga gccagaata cgaagcttta     1140
gccttaattc gagaaaaatc tcaagattca cccgatttac tgccaggttt gtgcttatat     1200
gccgaacaat ggctgcaaaa tgaagttttc cccatttcc gcgatttgtc cagacagcaa     1260
gcttcctga aagattactt tgctaataca caagtacaag cgtattttaga agccttgccc     1320
```

aacgacgcgg aaaccactaa tgaatgggct gtaattaacc gccaatcggtt ttctcaaccc 1380
 aggggcaatt cttactctgg aggaacgcca gtcgccaaac gtcccgtagg gaaggcgaac 1440
 aggccaggag aagcgtccac aagaccagtt ccccaacgta gtcatccatc agaagtaaatt 1500
 cggcagtttc atcaaaacag aacccttgat cccgaattac cagaaacatc aaaccacaga 1560
 agaccagagt cttcaaattt tacaactgct agagaaaata tatcgaccac agatgcttac 1620
 actgacaatt atccaccaga gatccctgta gaacgcgcca gcagacctgt tcagccgggg 1680
 gtaagtgggt atacccaatc gaccctcca cggcaaactc ctaaacgcag gagacgcaag 1740
 aagccacagg cagttgtcaa cagaggacac agtattcatc agcaacgcca accctcacct 1800
 agcactctag gccggaaaac aagattactt tggatagttt tgggttcttt ggggtgggata 1860
 ttattgttct ggctgatagt ctcaacgact tttgggtgggt taaagaatgt attcttccca 1920
 gcaccatctt tacaagggtga gcaattatcg attcagatta gtcaaccacc tttagagatt 1980
 cctgacaaaa atgccagat acaatcccca gaggtgagtc tcacagaaga aacggcaagg 2040
 aaaataattg aaaattgggt ggctaccaa gctagtgtt taggcgctga acataaaaatt 2100
 gagagtttaa acgagatttt aactgggttca gcgttatctc aatggcgggt aattgccttg 2160
 caagataaag cagacaatcg tcatcgagaa tacagtcata gtgtcaagg agactccatc 2220
 agtaaactctg acatagatcc caatcgtgca agtgtggggg ctacagtcag agagttaacc 2280
 caattttatg agaattgggca aaaagggag tcttctgacg aaagattacg tgtacgctat 2340
 gaattgattc gacaagatga tatttggcgg attcagagga tgtcagccgc tataaattaa 2400

<210> 164
 <211> 798
 <212> PRT
 <213> Anabaena PCC7120

<400> 164

Met Leu Ile Thr Val Gln Gly Lys Tyr Ala Val Arg Ile Pro Leu Asp
 1 5 10 15

Tyr Tyr Arg Ile Leu Gly Leu Pro Leu Ala Ala Ser Asp Glu Gln Leu
 20 25 30

Arg Gln Ala Tyr Ser Asp Arg Ile Val Gln Leu Pro Arg Arg Glu Tyr
 35 40 45

Ser Gln Ala Ala Ile Ala Ser Arg Lys Gln Leu Ile Glu Glu Ala Tyr
 50 55 60

Val	Val	Leu	Ser	Asp	Pro	Lys	Glu	Arg	Ser	Ser	Tyr	Asp	Gln	Leu	Tyr	65	70	75	80
Leu	Ala	His	Ala	Tyr	Asp	Pro	Asp	Asn	Ala	Ala	Thr	Thr	Lys	Val	Ala	85	90	95	
Val	Glu	Asn	Arg	Gly	Asp	Ser	Asn	Asn	Gly	His	Phe	Asp	Val	Gln	Ser	100	105	110	
Leu	Ser	Ile	Glu	Val	Ser	Ser	Glu	Glu	Leu	Ile	Gly	Ala	Leu	Leu	Ile	115	120	125	
Leu	Gln	Glu	Leu	Gly	Glu	Tyr	Glu	Leu	Val	Leu	Lys	Leu	Gly	Arg	Asn	130	135	140	
Tyr	Leu	Gly	Asn	Gln	Asn	Gly	Thr	Ala	Ser	Thr	Arg	Asn	Gly	Asn	His	145	150	155	160
Arg	Thr	Pro	Glu	Glu	Phe	Leu	Asp	Ser	Ser	Glu	Arg	Pro	Asp	Ile	Leu	165	170	175	
Leu	Thr	Val	Ala	Leu	Ala	Ser	Leu	Glu	Leu	Gly	Arg	Glu	Gln	Trp	Gln	180	185	190	
Gln	Gly	His	Tyr	Glu	Asn	Ala	Ala	Leu	Ser	Leu	Glu	Thr	Gly	Gln	Glu	195	200	205	
Val	Leu	Phe	Ser	Glu	Gly	Ile	Phe	Pro	Ser	Val	Gln	Ala	Glu	Ile	Gln	210	215	220	
Ala	Asp	Leu	Tyr	Lys	Leu	Arg	Pro	Tyr	Arg	Ile	Leu	Glu	Leu	Leu	Ala	225	230	235	240
Leu	Pro	Gln	Glu	Lys	Thr	Ile	Glu	Arg	His	Gln	Gly	Leu	Asp	Leu	Leu	245	250	255	
Gln	Ser	Ile	Leu	Asp	Asp	Arg	Gly	Gly	Ile	Asp	Gly	Thr	Gly	Asn	Asp	260	265	270	
Gln	Ser	Gly	Leu	Asn	Ile	Asp	Asp	Phe	Leu	Arg	Phe	Ile	Gln	Gln	Leu	275	280	285	

Arg His His Leu Thr Val Ala Glu Gln His Lys Leu Phe Asp Gly Glu
 290 295 300
 Ser Lys Arg Pro Ser Ala Val Ala Thr Tyr Leu Ala Val Tyr Ala Ser
 305 310 315 320
 Ile Ala Arg Gly Phe Thr Gln Arg Gln Pro Ala Leu Ile Arg His Ala
 325 330 335
 Lys Gln Ile Leu Met Arg Leu Ser Lys Arg Gln Asp Val His Leu Glu
 340 345 350
 Gln Ser Leu Cys Ala Leu Leu Leu Gly Gln Thr Glu Glu Ala Thr Arg
 355 360 365
 Val Leu Glu Leu Ser Gln Glu Tyr Glu Ala Leu Ala Leu Ile Arg Glu
 370 375 380
 Lys Ser Gln Asp Ser Pro Asp Leu Leu Pro Gly Leu Cys Leu Tyr Ala
 385 390 395 400
 Glu Gln Trp Leu Gln Asn Glu Val Phe Pro His Phe Arg Asp Leu Ser
 405 410 415
 Arg Gln Gln Ala Ser Leu Lys Asp Tyr Phe Ala Asn Gln Gln Val Gln
 420 425 430
 Ala Tyr Leu Glu Ala Leu Pro Asn Asp Ala Glu Thr Thr Asn Glu Trp
 435 440 445
 Ala Val Ile Asn Arg Gln Ser Phe Ser Gln Pro Arg Gly Asn Ser Tyr
 450 455 460
 Ser Gly Gly Thr Pro Val Ala Lys Arg Pro Val Gly Lys Ala Asn Arg
 465 470 475 480
 Pro Gly Glu Ala Ser Thr Arg Pro Val Pro Gln Arg Ser His Pro Ser
 485 490 495
 Glu Val Asn Arg Gln Phe His Gln Asn Arg Thr Pro Asp Pro Glu Leu
 500 505 510
 Pro Glu Thr Ser Asn His Arg Arg Pro Glu Ser Ser Asn Phe Thr Thr
 515 520 525

Ala	Arg	Glu	Asn	Ile	Ser	Thr	Thr	Asp	Ala	Tyr	Thr	Asp	Asn	Tyr	Pro
530						535					540				
Pro	Glu	Ile	Pro	Val	Glu	Arg	Ala	Ser	Arg	Pro	Val	Gln	Pro	Gly	Val
545					550					555					560
Ser	Gly	Tyr	Thr	Gln	Ser	Thr	Pro	Pro	Arg	Gln	Thr	Pro	Lys	Arg	Arg
				565					570					575	
Arg	Arg	Lys	Lys	Pro	Gln	Ala	Val	Val	Asn	Arg	Gly	His	Ser	Ile	His
			580						585					590	
Gln	Gln	Arg	Gln	Pro	Ser	Pro	Ser	Thr	Leu	Gly	Arg	Lys	Thr	Arg	Leu
		595					600					605			
Leu	Trp	Ile	Val	Leu	Gly	Ser	Leu	Gly	Gly	Ile	Leu	Leu	Phe	Trp	Leu
610						615					620				
Ile	Val	Ser	Thr	Thr	Phe	Gly	Trp	Leu	Lys	Asn	Val	Phe	Phe	Pro	Ala
625					630					635					640
Pro	Ser	Leu	Gln	Gly	Glu	Gln	Leu	Ser	Ile	Gln	Ile	Ser	Gln	Pro	Pro
				645					650					655	
Leu	Glu	Ile	Pro	Asp	Lys	Asn	Ala	Gln	Ile	Gln	Ser	Pro	Glu	Val	Ser
			660					665					670		
Leu	Thr	Glu	Glu	Thr	Ala	Arg	Lys	Ile	Ile	Glu	Asn	Trp	Leu	Ala	Thr
		675					680					685			
Lys	Ala	Ser	Ala	Leu	Gly	Ala	Glu	His	Lys	Ile	Glu	Ser	Leu	Asn	Glu
	690					695					700				
Ile	Leu	Thr	Gly	Ser	Ala	Leu	Ser	Gln	Trp	Arg	Leu	Ile	Ala	Leu	Gln
705					710					715					720
Asp	Lys	Ala	Asp	Asn	Arg	His	Arg	Glu	Tyr	Ser	His	Ser	Val	Lys	Val
				725					730					735	
Asp	Ser	Ile	Ser	Lys	Ser	Asp	Ile	Asp	Pro	Asn	Arg	Ala	Ser	Val	Gly
			740					745						750	

Ala Thr Val Arg Glu Leu Thr Gln Phe Tyr Glu Asn Gly Gln Lys Gly
755 760 765

Lys Ser Ser Asp Glu Arg Leu Arg Val Arg Tyr Glu Leu Ile Arg Gln
770 775 780

Asp Asp Ile Trp Arg Ile Gln Arg Met Ser Ala Ala Ile Asn
785 790 795

<210> 165
<211> 798
<212> PRT
<213> Anabaena PCC7120

<400> 165

Met Leu Ile Thr Val Gln Gly Lys Tyr Ala Val Arg Ile Pro Leu Asp
1 5 10 15

Tyr Tyr Arg Ile Leu Gly Leu Pro Leu Ala Ala Ser Asp Glu Gln Leu
20 25 30

Arg Gln Ala Tyr Ser Asp Arg Ile Val Gln Leu Pro Arg Arg Glu Tyr
35 40 45

Ser Gln Ala Ala Ile Ala Ser Arg Lys Gln Leu Ile Glu Glu Ala Tyr
50 55 60

Val Val Leu Ser Asp Pro Lys Glu Arg Ser Ser Tyr Asp Gln Leu Tyr
65 70 75 80

Leu Ala His Ala Tyr Asp Pro Asp Asn Ala Ala Thr Thr Lys Val Ala
85 90 95

Val Glu Asn Arg Gly Asp Ser Asn Asn Gly His Phe Asp Val Gln Ser
100 105 110

Leu Ser Ile Glu Val Ser Ser Glu Glu Leu Ile Gly Ala Leu Leu Ile
115 120 125

Leu Gln Glu Leu Gly Glu Tyr Glu Leu Val Leu Lys Leu Gly Arg Asn
130 135 140

Tyr Leu Gly Asn Gln Asn Gly Thr Ala Ser Thr Arg Asn Gly Asn His
145 150 155 160

Arg	Thr	Pro	Glu	Glu	Phe	Leu	Asp	Ser	Ser	Glu	Arg	Pro	Asp	Ile	Leu	165	170	175	
Leu	Thr	Val	Ala	Leu	Ala	Ser	Leu	Glu	Leu	Gly	Arg	Glu	Gln	Trp	Gln	180	185	190	
Gln	Gly	His	Tyr	Glu	Asn	Ala	Ala	Leu	Ser	Leu	Glu	Thr	Gly	Gln	Glu	195	200	205	
Val	Leu	Phe	Ser	Glu	Gly	Ile	Phe	Pro	Ser	Val	Gln	Ala	Glu	Ile	Gln	210	215	220	
Ala	Asp	Leu	Tyr	Lys	Leu	Arg	Pro	Tyr	Arg	Ile	Leu	Glu	Leu	Leu	Ala	225	230	235	240
Leu	Pro	Gln	Glu	Lys	Thr	Ile	Glu	Arg	His	Gln	Gly	Leu	Asp	Leu	Leu	245	250	255	
Gln	Ser	Ile	Leu	Asp	Asp	Arg	Gly	Gly	Ile	Asp	Gly	Thr	Gly	Asn	Asp	260	265	270	
Gln	Ser	Gly	Leu	Asn	Ile	Asp	Asp	Phe	Leu	Arg	Phe	Ile	Gln	Gln	Leu	275	280	285	
Arg	His	His	Leu	Thr	Val	Ala	Glu	Gln	His	Lys	Leu	Phe	Asp	Gly	Glu	290	295	300	
Ser	Lys	Arg	Pro	Ser	Ala	Val	Ala	Thr	Tyr	Leu	Ala	Val	Tyr	Ala	Ser	305	310	315	320
Ile	Ala	Arg	Gly	Phe	Thr	Gln	Arg	Gln	Pro	Ala	Leu	Ile	Arg	His	Ala	325	330	335	
Lys	Gln	Ile	Leu	Met	Arg	Leu	Ser	Lys	Arg	Gln	Asp	Val	His	Leu	Glu	340	345	350	
Gln	Ser	Leu	Cys	Ala	Leu	Leu	Leu	Gly	Gln	Thr	Glu	Glu	Ala	Thr	Arg	355	360	365	
Val	Leu	Glu	Leu	Ser	Gln	Glu	Tyr	Glu	Ala	Leu	Ala	Leu	Ile	Arg	Glu	370	375	380	
Lys	Ser	Gln	Asp	Ser	Pro	Asp	Leu	Leu	Pro	Gly	Leu	Cys	Leu	Tyr	Ala	385	390	395	400

Glu Gln Trp Leu Gln Asn Glu Val Phe Pro His Phe Arg Asp Leu Ser
 405 410 415
 Arg Gln Gln Ala Ser Leu Lys Asp Tyr Phe Ala Asn Gln Gln Val Gln
 420 425 430
 Ala Tyr Leu Glu Ala Leu Pro Asn Asp Ala Glu Thr Thr Asn Glu Trp
 435 440 445
 Ala Val Ile Asn Arg Gln Ser Phe Ser Gln Pro Arg Gly Asn Ser Tyr
 450 455 460
 Ser Gly Gly Thr Pro Val Ala Lys Arg Pro Val Gly Lys Ala Asn Arg
 465 470 475 480
 Pro Gly Glu Ala Ser Thr Arg Pro Val Pro Gln Arg Ser His Pro Ser
 485 490 495
 Glu Val Asn Arg Gln Phe His Gln Asn Arg Thr Pro Asp Pro Glu Leu
 500 505 510
 Pro Glu Thr Ser Asn His Arg Arg Pro Glu Ser Ser Asn Phe Thr Thr
 515 520 525
 Ala Arg Glu Asn Ile Ser Thr Thr Asp Ala Tyr Thr Asp Asn Tyr Pro
 530 535 540
 Pro Glu Ile Pro Val Glu Arg Ala Ser Arg Pro Val Gln Pro Gly Val
 545 550 555 560
 Ser Gly Tyr Thr Gln Ser Thr Pro Pro Arg Gln Thr Pro Lys Arg Arg
 565 570 575
 Arg Arg Lys Lys Pro Gln Ala Val Val Asn Arg Gly His Ser Ile His
 580 585 590
 Gln Gln Arg Gln Pro Ser Pro Ser Thr Leu Gly Arg Lys Thr Arg Leu
 595 600 605
 Leu Trp Ile Val Leu Gly Ser Leu Gly Gly Ile Leu Leu Phe Trp Leu
 610 615 620

Ile Val Ser Thr Thr Phe Gly Trp Leu Lys Asn Val Phe Phe Pro Ala
625 630 635 640

Pro Ser Leu Gln Gly Glu Gln Leu Ser Ile Gln Ile Ser Gln Pro Pro
645 650 655

Leu Glu Ile Pro Asp Lys Asn Ala Gln Ile Gln Ser Pro Glu Val Ser
660 665 670

Leu Thr Glu Glu Thr Ala Arg Lys Ile Ile Glu Asn Trp Leu Ala Thr
675 680 685

Lys Ala Ser Ala Leu Gly Ala Glu His Lys Ile Glu Ser Leu Asn Glu
690 695 700

Ile Leu Thr Gly Ser Ala Leu Ser Gln Trp Arg Leu Ile Ala Leu Gln
705 710 715 720

Asp Lys Ala Asp Asn Arg His Arg Glu Tyr Ser His Ser Val Lys Val
725 730 735

Asp Ser Ile Ser Lys Ser Asp Ile Asp Pro Asn Arg Ala Ser Val Gly
740 745 750

Ala Thr Val Arg Glu Leu Thr Gln Phe Tyr Glu Asn Gly Gln Lys Gly
755 760 765

Lys Ser Ser Asp Glu Arg Leu Arg Val Arg Tyr Glu Leu Ile Arg Gln
770 775 780

Asp Asp Ile Trp Arg Ile Gln Arg Met Ser Ala Ala Ile Asn
785 790 795

<210> 166

<211> 2307

<212> DNA

<213> Nostoc punctiforme

<400> 166

gtgcgaattc cgctagatta ctaccgaatt ttaggactac cgtttagcggc aagtgaagaa 60

caattgcgac aggcatacag cgatcgcatt gtacaattgc cacgacgtga gtattctcag 120

gcagcaattt cttctcgtaa acaactcata gaagaagctt acgtgggttt atcagatcca 180

aaacaacgca gtacctacga tcagctttat cttgcccacg cctatgaccc tgataacctt 240

gctgctgccg cagtagcaca ggaaaatcgt acagaaagca ccaaaagggg tagtgatacc	300
cagagtcttg gtatagaaat tacccaagac gaattagttg gcgctttatt aattttgcaa	360
gagttgggtg aatacgaact tgtattgaaa ctaggtcgtc cgtacctagt aaataaaaat	420
agtgtacaa gttcaagaaa aagcaataac ttagcagatg aagaaattta tgaaagtgc	480
gaacaccag atgtcgttct cactgttgct cttgcctgtc tagaattagg tcgggaacag	540
tggcagcaag gtcactacga aaatgccgcc atatccctag aaactgggtca agagctgcta	600
gtacgtgaag gtttggttctc cagtatccag gcagaaattc aggctgatct ttacaaattg	660
cggccatata gaattttgga gttgctcgca ttacctcaag aaaagactgc cgaacgaagc	720
caaggcttag aattattgca aaatctctta gaagatcgtg gcgggattga tggcacgaac	780
aatgatgaat cgggtttaaa catagatgac tttctgcgat ttatccagca gttacgcaac	840
cacttaacag ttgcagaaca gcacaagtta tttgaagctc aaagcaaacy ttcttctgct	900
gttgccactt acttagctgt ttatgccttg atagcgcgag gatttgctca acggcaacct	960
gctttaattc gtcaagcaag acaaatgctc gtgcgtctgg gcaagcgcca agatgtacat	1020
ttagaacagt cgctatgtgc cttacttttg gggcaaactg aagaagcaac tcgtgtttta	1080
gaacttagtc aggagtacga agcttttagct tttattcggg aaaaatctca ggactctcca	1140
gatttgttac cgggtctgtg tttatatgca gaacagtggc tgcaacacga agtctttccc	1200
cattttcgag atttagcaaa ccagcaagct ttcctaaaag attactttgc taaccaacag	1260
gtgcaagctt atttagaagc actgccaaact gatgccccaa caactaatga atgggctgta	1320
attaaccccc agtattttcc ccaggccaag gcaaagaata ctcatTTTTca taacaattca	1380
actaaaactt cagcgtcatt taatcacagc agagtaccta acccagattt gccagaaaca	1440
ccaacaaaag aaacctctga atatccaaac ttctcaccac ctatgtggag ttcatctgga	1500
agtataaaat cagaggttcc tgctgctgaa aggatgagca gaggtactaa tcagcatttg	1560
aacggttcag ctaagagtgc tgcactctgt cataaccaa agcgtaggcg gagaaaacct	1620
actccatctg ctagccgaga gcgtatacca gataatcgtc ctcatctctg tcgtccccga	1680
aggcggcgaa cttttgcgaa caccatagaa ggtaaaacac ggctgggtatg gagagtgttt	1740
atttcttttg tgagcatatt agtttttttg gtattagcca caacaacttt tggatgggta	1800
aaaaatctgt tttttcctca accttctccg cctgatctac agttgtttgt acaaataaac	1860
caaccaccgt tacctattcc cgatccaaat agaaaaccag aatcagaaga aggcccttta	1920
acaaatgcag aggcagaaga agttattcac acttggttat ctaccaaagc cgcagcttta	1980

gggcccaatc atgagattaa taatttagag caaatttttaa ctggttcagc tttatctcaa 2040
 tggcgactga ttgctcaaca gaataagtta gacaatcgct accgcaagtt cgaccatagt 2100
 ttgaagatag aatctgttga gaaaattggt ttatttgcag atcgtgccgc agtagaagct 2160
 acggctcaaag aagtgcgca gttatatgaa aataatcagt ttaaaaaactc ttctaacgat 2220
 aaattaagag ttcggtatga cttgattcga gaacgaggta aatggcgtat tcagagtaca 2280
 tctgttgtaa atcaattcac cagataa 2307

<210> 167
 <211> 768
 <212> PRT
 <213> Nostoc punctiforme

<400> 167

Val Arg Ile Pro Leu Asp Tyr Tyr Arg Ile Leu Gly Leu Pro Leu Ala
 1 5 10 15

Ala Ser Glu Glu Gln Leu Arg Gln Ala Tyr Ser Asp Arg Ile Val Gln
 20 25 30

Leu Pro Arg Arg Glu Tyr Ser Gln Ala Ala Ile Ser Ser Arg Lys Gln
 35 40 45

Leu Ile Glu Glu Ala Tyr Val Val Leu Ser Asp Pro Lys Gln Arg Ser
 50 55 60

Thr Tyr Asp Gln Leu Tyr Leu Ala His Ala Tyr Asp Pro Asp Asn Leu
 65 70 75 80

Ala Ala Ala Ala Val Ala Gln Glu Asn Arg Thr Glu Ser Thr Lys Arg
 85 90 95

Gly Ser Asp Thr Gln Ser Leu Gly Ile Glu Ile Thr Gln Asp Glu Leu
 100 105 110

Val Gly Ala Leu Leu Ile Leu Gln Glu Leu Gly Glu Tyr Glu Leu Val
 115 120 125

Leu Lys Leu Gly Arg Pro Tyr Leu Val Asn Lys Asn Ser Ala Thr Ser
 130 135 140

Ser Arg Lys Ser Asn Asn Leu Ala Asp Glu Glu Ile Tyr Glu Ser Ala
 145 150 155 160

Glu	His	Pro	Asp	Val	Val	Leu	Thr	Val	Ala	Leu	Ala	Cys	Leu	Glu	Leu	165	170	175
Gly	Arg	Glu	Gln	Trp	Gln	Gln	Gly	His	Tyr	Glu	Asn	Ala	Ala	Ile	Ser	180	185	190
Leu	Glu	Thr	Gly	Gln	Glu	Leu	Leu	Val	Arg	Glu	Gly	Leu	Phe	Ser	Ser	195	200	205
Ile	Gln	Ala	Glu	Ile	Gln	Ala	Asp	Leu	Tyr	Lys	Leu	Arg	Pro	Tyr	Arg	210	215	220
Ile	Leu	Glu	Leu	Leu	Ala	Leu	Pro	Gln	Glu	Lys	Thr	Ala	Glu	Arg	Ser	225	230	235
Gln	Gly	Leu	Glu	Leu	Leu	Gln	Asn	Leu	Leu	Glu	Asp	Arg	Gly	Gly	Ile	245	250	255
Asp	Gly	Thr	Asn	Asn	Asp	Glu	Ser	Gly	Leu	Asn	Ile	Asp	Asp	Phe	Leu	260	265	270
Arg	Phe	Ile	Gln	Gln	Leu	Arg	Asn	His	Leu	Thr	Val	Ala	Glu	Gln	His	275	280	285
Lys	Leu	Phe	Glu	Ala	Gln	Ser	Lys	Arg	Ser	Ser	Ala	Val	Ala	Thr	Tyr	290	295	300
Leu	Ala	Val	Tyr	Ala	Leu	Ile	Ala	Arg	Gly	Phe	Ala	Gln	Arg	Gln	Pro	305	310	315
Ala	Leu	Ile	Arg	Gln	Ala	Arg	Gln	Met	Leu	Val	Arg	Leu	Gly	Lys	Arg	325	330	335
Gln	Asp	Val	His	Leu	Glu	Gln	Ser	Leu	Cys	Ala	Leu	Leu	Leu	Gly	Gln	340	345	350
Thr	Glu	Glu	Ala	Thr	Arg	Val	Leu	Glu	Leu	Ser	Gln	Glu	Tyr	Glu	Ala	355	360	365

Leu Ala Phe Ile Arg Glu Lys Ser Gln Asp Ser Pro Asp Leu Leu Pro
 370 375 380

Gly Leu Cys Leu Tyr Ala Glu Gln Trp Leu Gln His Glu Val Phe Pro
 385 390 395 400

His Phe Arg Asp Leu Ala Asn Gln Gln Ala Phe Leu Lys Asp Tyr Phe
 405 410 415

Ala Asn Gln Gln Val Gln Ala Tyr Leu Glu Ala Leu Pro Thr Asp Ala
 420 425 430

Gln Thr Thr Asn Glu Trp Ala Val Ile Asn Pro Gln Tyr Phe Pro Gln
 435 440 445

Ala Lys Ala Lys Asn Thr His Phe His Asn Asn Ser Thr Lys Thr Ser
 450 455 460

Ala Ser Phe Asn His Ser Arg Val Pro Asn Pro Asp Leu Pro Glu Thr
 465 470 475 480

Pro Thr Lys Glu Thr Ser Glu Tyr Pro Asn Phe Ser Pro Pro Met Trp
 485 490 495

Ser Ser Ser Gly Ser Ile Lys Ser Glu Val Pro Ala Ala Glu Arg Met
 500 505 510

Ser Arg Gly Thr Asn Gln His Leu Asn Gly Ser Ala Lys Ser Ala Ala
 515 520 525

Ser Gly His Asn Gln Lys Arg Arg Arg Arg Lys Pro Thr Pro Ser Ala
 530 535 540

Ser Arg Glu Arg Ile Pro Asp Asn Arg Pro His Ser Arg Arg Pro Arg
 545 550 555 560

Arg Arg Arg Thr Phe Ala Asn Thr Ile Glu Gly Lys Thr Arg Leu Val
 565 570 575

Trp Arg Val Phe Ile Ser Leu Val Ser Ile Leu Val Phe Trp Val Leu
 580 585 590

Ala Thr Thr Thr Phe Gly Trp Leu Lys Asn Leu Phe Phe Pro Gln Pro
595 600 605

Ser Pro Pro Asp Leu Gln Leu Phe Val Gln Ile Asn Gln Pro Pro Leu
610 615 620

Pro Ile Pro Asp Pro Asn Arg Lys Pro Glu Ser Glu Glu Gly Pro Leu
625 630 635 640

Thr Asn Ala Glu Ala Glu Glu Val Ile His Thr Trp Leu Ser Thr Lys
645 650 655

Ala Ala Ala Leu Gly Pro Asn His Glu Ile Asn Asn Leu Glu Gln Ile
660 665 670

Leu Thr Gly Ser Ala Leu Ser Gln Trp Arg Leu Ile Ala Gln Gln Asn
675 680 685

Lys Leu Asp Asn Arg Tyr Arg Lys Phe Asp His Ser Leu Lys Ile Glu
690 695 700

Ser Val Glu Lys Ile Gly Leu Phe Ala Asp Arg Ala Ala Val Glu Ala
705 710 715 720

Thr Val Lys Glu Val Thr Gln Leu Tyr Glu Asn Asn Gln Phe Lys Asn
725 730 735

Ser Ser Asn Asp Lys Leu Arg Val Arg Tyr Asp Leu Ile Arg Glu Arg
740 745 750

Gly Lys Trp Arg Ile Gln Ser Thr Ser Val Val Asn Gln Phe Thr Arg
755 760 765

<210> 168
<211> 2145
<212> DNA
<213> Synechocystis PCC6803

<400> 168
gtgtttatcc ccctcgactt ttatcgtatt ttaggcattc ctccccagag tgggtggggaa 60
accattgagc aggcctacca agatcgctt ttacaattac cccggcgaga atttagtgac 120
gccgcagtta ctctccgcaa tcaattactg gcgatcgct atgaaaccct gagggatccg 180
gaaaaacgtc aggcatacga ccaagaatgg tggggagcca tggatgaagc cctggggggag 240

gccttacccc	tcactacccc	ggagttggaa	tgtagcccag	agcaagaaat	tggagccctg	300
ttgatcctgt	tggatttggg	ggaatacgaa	ctcgtgggta	agtatgggtga	gccagtactc	360
cacgatccca	accctccggc	gggaggcctg	ccccaggact	atttgctttc	ggtaattttg	420
gcccactggg	aactgagccg	ggaacgttgg	caacaacagc	agtatgaatt	tgccgccacc	480
gccagtctta	aggccctagc	tcggttgcaa	caggataatg	acttccccgc	cttgggaagca	540
gaaattcgtc	aggaactata	ccgtctgoga	ccctaccgta	tcctcgaact	tttggctaag	600
gagggggcaag	gggaggagca	acgtcagcag	ggctctagctc	tgttgcaagc	gatgggtgcag	660
gaccggggcg	gcattgaagg	taagggggaa	gattattccg	gattgggaaa	tgatgacttt	720
ctaaaattca	tccaccaact	acgtctgtcac	ctcacagtgg	ccgagcaaaa	cgccctattt	780
ttgcccgaag	gtcaacggcc	atcttttagta	gcaagctatt	tggcagtaca	tagtctgatg	840
gctgagggag	tgaaggaaca	ggaccccatg	gccattgtcg	aagcaaaatc	tttgattata	900
cagttggaaa	attgtcaaga	tttggcccta	gaaaaggtaa	tttgtgaatt	attattgggt	960
caaacggaag	ttgtttctggc	ggcgatcgac	caggggagatc	cgaaaatagt	agctggcctc	1020
gaatctaagt	tagcgacggg	ggaagacccc	ttaactgctt	tttatacttt	cactgagcag	1080
tggctagagg	aagaaattgt	cccctacttt	agggatcttt	ctccggagac	cctttccccc	1140
aaggcctatt	tcaataatcc	ctccgttcag	cagtatctag	aacaactaga	gccggattcc	1200
ttcaccactg	acaattcttt	tgcctccctt	gccctcctta	gcaccgcaac	ggaatcgga	1260
actcccatgg	tacatagttc	cgccgcccct	cccgatcgcc	ctttgacctc	caccgttccc	1320
tcacgacggg	gacgcagtcc	aagacgttcc	cgagacgatg	ttttccccag	cgccgacaat	1380
tccagtgggt	tggccgtcac	caccctatct	ccggcgatcg	cctacgacac	ccactccttg	1440
ggcaccaacg	gtattggcgg	ggatagcact	agcaacgggt	tttccagtaa	ctccgcccc	1500
gaatccacca	gtaaacataa	atctccccgg	cgacgcaaaa	aacgggtgac	catcaagccg	1560
gtgcgcttcg	gcatttttct	gctttgccta	gcaggcattg	tggggggggc	aactgcccta	1620
attatcaatc	gtactggcga	tcccctaggt	gggttgctag	aagaccccct	agatgttttc	1680
ctggaccaac	cttcagaatt	tatccccgat	gaagccacga	gccggaattt	gattctcagt	1740
caacccaact	tcaatcagca	agtgggtcag	atggtagtac	aaggctggct	tgatagtaaa	1800
aagttagcct	ttggccaaaa	ctacgatgtc	ggggcattgc	agagtgtttt	agcccccaat	1860
ctccttgccc	aacaacgggg	tcgggcccga	cgggatcaag	cccaaaagg	ctatcaccaa	1920
tacgaacaca	agttgcagat	tttagcctat	caagttaacc	cccaagaccc	caaccgagcc	1980

accgttactg cccgggtaga agaaattagc cagcccttta ccctaggtaa tcaacagcag 2040
aagggctccg ccaccaaaga tgacttgact gtgcgctatc agctagtacg acaccaaggg 2100
gtttggaaaa ttgaccaaata acaagtggta aatggccccc gtttag 2145

<210> 169
<211> 714
<212> PRT
<213> Synechocystis PCC6803

<400> 169

Met Phe Ile Pro Leu Asp Phe Tyr Arg Ile Leu Gly Ile Pro Pro Gln
1 5 10 15

Ser Gly Gly Glu Thr Ile Glu Gln Ala Tyr Gln Asp Arg Leu Leu Gln
20 25 30

Leu Pro Arg Arg Glu Phe Ser Asp Ala Ala Val Thr Leu Arg Asn Gln
35 40 45

Leu Leu Ala Ile Ala Tyr Glu Thr Leu Arg Asp Pro Glu Lys Arg Gln
50 55 60

Ala Tyr Asp Gln Glu Trp Trp Gly Ala Met Asp Glu Ala Leu Gly Glu
65 70 75 80

Ala Leu Pro Leu Thr Thr Pro Glu Leu Glu Cys Ser Pro Glu Gln Glu
85 90 95

Ile Gly Ala Leu Leu Ile Leu Leu Asp Leu Gly Glu Tyr Glu Leu Val
100 105 110

Val Lys Tyr Gly Glu Pro Val Leu His Asp Pro Asn Pro Pro Ala Gly
115 120 125

Gly Leu Pro Gln Asp Tyr Leu Leu Ser Val Ile Leu Ala His Trp Glu
130 135 140

Leu Ser Arg Glu Arg Trp Gln Gln Gln Gln Tyr Glu Phe Ala Ala Thr
145 150 155 160

Ala Ser Leu Lys Ala Leu Ala Arg Leu Gln Gln Asp Asn Asp Phe Pro
165 170 175

Ala	Leu	Glu	Ala	Glu	Ile	Arg	Gln	Glu	Leu	Tyr	Arg	Leu	Arg	Pro	Tyr		
			180					185					190				
Arg	Ile	Leu	Glu	Leu	Leu	Ala	Lys	Glu	Gly	Gln	Gly	Glu	Glu	Gln	Arg		
		195					200					205					
Gln	Gln	Gly	Leu	Ala	Leu	Leu	Gln	Ala	Met	Val	Gln	Asp	Arg	Gly	Gly		
	210						215				220						
Ile	Glu	Gly	Lys	Gly	Glu	Asp	Tyr	Ser	Gly	Leu	Gly	Asn	Asp	Asp	Phe		
225					230					235					240		
Leu	Lys	Phe	Ile	His	Gln	Leu	Arg	Cys	His	Leu	Thr	Val	Ala	Glu	Gln		
				245					250					255			
Asn	Ala	Leu	Phe	Leu	Pro	Glu	Ser	Gln	Arg	Pro	Ser	Leu	Val	Ala	Ser		
			260					265					270				
Tyr	Leu	Ala	Val	His	Ser	Leu	Met	Ala	Glu	Gly	Val	Lys	Glu	Gln	Asp		
	275						280					285					
Pro	Met	Ala	Ile	Val	Glu	Ala	Lys	Ser	Leu	Ile	Ile	Gln	Leu	Glu	Asn		
	290					295					300						
Cys	Gln	Asp	Leu	Ala	Leu	Glu	Lys	Val	Ile	Cys	Glu	Leu	Leu	Leu	Gly		
305					310					315					320		
Gln	Thr	Glu	Val	Val	Leu	Ala	Ala	Ile	Asp	Gln	Gly	Asp	Pro	Lys	Ile		
				325					330					335			
Val	Ala	Gly	Leu	Glu	Ser	Lys	Leu	Ala	Thr	Gly	Glu	Asp	Pro	Leu	Thr		
			340					345					350				
Ala	Phe	Tyr	Thr	Phe	Thr	Glu	Gln	Trp	Leu	Glu	Glu	Glu	Ile	Val	Pro		
		355					360					365					
Tyr	Phe	Arg	Asp	Leu	Ser	Pro	Glu	Thr	Leu	Ser	Pro	Lys	Ala	Tyr	Phe		
	370					375					380						
Asn	Asn	Pro	Ser	Val	Gln	Gln	Tyr	Leu	Glu	Gln	Leu	Glu	Pro	Asp	Ser		
385					390					395					400		
Phe	Thr	Thr	Asp	Asn	Ser	Phe	Ala	Ser	Pro	Ala	Leu	Leu	Ser	Thr	Ala		
				405					410					415			

Thr Glu Ser Glu Thr Pro Met Val His Ser Ser Ala Ala Leu Pro Asp
 420 425 430

Arg Pro Leu Thr Ser Thr Val Pro Ser Arg Arg Gly Arg Ser Pro Arg
 435 440 445

Arg Ser Arg Asp Asp Val Phe Pro Ser Ala Asp Asn Ser Ser Gly Leu
 450 455 460

Ala Val Thr Thr Leu Ser Pro Ala Ile Ala Tyr Asp Thr His Ser Leu
 465 470 475 480

Gly Thr Asn Gly Ile Gly Gly Asp Ser Thr Ser Asn Gly Phe Ser Ser
 485 490 495

Asn Ser Ala Pro Glu Ser Thr Ser Lys His Lys Ser Pro Arg Arg Arg
 500 505 510

Lys Lys Arg Val Thr Ile Lys Pro Val Arg Phe Gly Ile Phe Leu Leu
 515 520 525

Cys Leu Ala Gly Ile Val Gly Gly Ala Thr Ala Leu Ile Ile Asn Arg
 530 535 540

Thr Gly Asp Pro Leu Gly Gly Leu Leu Glu Asp Pro Leu Asp Val Phe
 545 550 555 560

Leu Asp Gln Pro Ser Glu Phe Ile Pro Asp Glu Ala Thr Ser Arg Asn
 565 570 575

Leu Ile Leu Ser Gln Pro Asn Phe Asn Gln Gln Val Gly Gln Met Val
 580 585 590

Val Gln Gly Trp Leu Asp Ser Lys Lys Leu Ala Phe Gly Gln Asn Tyr
 595 600 605

Asp Val Gly Ala Leu Gln Ser Val Leu Ala Pro Asn Leu Leu Ala Gln
 610 615 620

Gln Arg Gly Arg Ala Gln Arg Asp Gln Ala Gln Lys Val Tyr His Gln
 625 630 635 640

Tyr Glu His Lys Leu Gln Ile Leu Ala Tyr Gln Val Asn Pro Gln Asp
645 650 655

Pro Asn Arg Ala Thr Val Thr Ala Arg Val Glu Glu Ile Ser Gln Pro
660 665 670

Phe Thr Leu Gly Asn Gln Gln Gln Lys Gly Ser Ala Thr Lys Asp Asp
675 680 685

Leu Thr Val Arg Tyr Gln Leu Val Arg His Gln Gly Val Trp Lys Ile
690 695 700

Asp Gln Ile Gln Val Val Asn Gly Pro Arg
705 710

<210> 170
<211> 714
<212> PRT
<213> Synechocystis PCC6803

<400> 170

Met Phe Ile Pro Leu Asp Phe Tyr Arg Ile Leu Gly Ile Pro Pro Gln
1 5 10 15

Ser Gly Gly Glu Thr Ile Glu Gln Ala Tyr Gln Asp Arg Leu Leu Gln
20 25 30

Leu Pro Arg Arg Glu Phe Ser Asp Ala Ala Val Thr Leu Arg Asn Gln
35 40 45

Leu Leu Ala Ile Ala Tyr Glu Thr Leu Arg Asp Pro Glu Lys Arg Gln
50 55 60

Ala Tyr Asp Gln Glu Trp Trp Gly Ala Met Asp Glu Ala Leu Gly Glu
65 70 75 80

Ala Leu Pro Leu Thr Thr Pro Glu Leu Glu Cys Ser Pro Glu Gln Glu
85 90 95

Ile Gly Ala Leu Leu Ile Leu Leu Asp Leu Gly Glu Tyr Glu Leu Val
100 105 110

Val Lys Tyr Gly Glu Pro Val Leu His Asp Pro Asn Pro Pro Ala Gly
115 120 125

Gly	Leu	Pro	Gln	Asp	Tyr	Leu	Leu	Ser	Val	Ile	Leu	Ala	His	Trp	Glu	
130						135					140					
Leu	Ser	Arg	Glu	Arg	Trp	Gln	Gln	Gln	Gln	Tyr	Glu	Phe	Ala	Ala	Thr	
145					150					155					160	
Ala	Ser	Leu	Lys	Ala	Leu	Ala	Arg	Leu	Gln	Gln	Asp	Asn	Asp	Phe	Pro	
			165						170					175		
Ala	Leu	Glu	Ala	Glu	Ile	Arg	Gln	Glu	Leu	Tyr	Arg	Leu	Arg	Pro	Tyr	
		180						185					190			
Arg	Ile	Leu	Glu	Leu	Leu	Ala	Lys	Glu	Gly	Gln	Gly	Glu	Glu	Gln	Arg	
	195						200					205				
Gln	Gln	Gly	Leu	Ala	Leu	Leu	Gln	Ala	Met	Val	Gln	Asp	Arg	Gly	Gly	
210						215					220					
Ile	Glu	Gly	Lys	Gly	Glu	Asp	Tyr	Ser	Gly	Leu	Gly	Asn	Asp	Asp	Phe	
225					230					235					240	
Leu	Lys	Phe	Ile	His	Gln	Leu	Arg	Cys	His	Leu	Thr	Val	Ala	Glu	Gln	
			245						250					255		
Asn	Ala	Leu	Phe	Leu	Pro	Glu	Ser	Gln	Arg	Pro	Ser	Leu	Val	Ala	Ser	
		260						265					270			
Tyr	Leu	Ala	Val	His	Ser	Leu	Met	Ala	Glu	Gly	Val	Lys	Glu	Gln	Asp	
	275						280					285				
Pro	Met	Ala	Ile	Val	Glu	Ala	Lys	Ser	Leu	Ile	Ile	Gln	Leu	Glu	Asn	
290						295					300					
Cys	Gln	Asp	Leu	Ala	Leu	Glu	Lys	Val	Ile	Cys	Glu	Leu	Leu	Leu	Gly	
305					310					315					320	
Gln	Thr	Glu	Val	Val	Leu	Ala	Ala	Ile	Asp	Gln	Gly	Asp	Pro	Lys	Ile	
			325						330					335		
Val	Ala	Gly	Leu	Glu	Ser	Lys	Leu	Ala	Thr	Gly	Glu	Asp	Pro	Leu	Thr	
		340						345					350			
Ala	Phe	Tyr	Thr	Phe	Thr	Glu	Gln	Trp	Leu	Glu	Glu	Glu	Ile	Val	Pro	
	355						360					365				

Tyr Phe Arg Asp Leu Ser Pro Glu Thr Leu Ser Pro Lys Ala Tyr Phe
 370 375 380

Asn Asn Pro Ser Val Gln Gln Tyr Leu Glu Gln Leu Glu Pro Asp Ser
 385 390 395 400

Phe Thr Thr Asp Asn Ser Phe Ala Ser Pro Ala Leu Leu Ser Thr Ala
 405 410 415

Thr Glu Ser Glu Thr Pro Met Val His Ser Ser Ala Ala Leu Pro Asp
 420 425 430

Arg Pro Leu Thr Ser Thr Val Pro Ser Arg Arg Gly Arg Ser Pro Arg
 435 440 445

Arg Ser Arg Asp Asp Val Phe Pro Ser Ala Asp Asn Ser Ser Gly Leu
 450 455 460

Ala Val Thr Thr Leu Ser Pro Ala Ile Ala Tyr Asp Thr His Ser Leu
 465 470 475 480

Gly Thr Asn Gly Ile Gly Gly Asp Ser Thr Ser Asn Gly Phe Ser Ser
 485 490 495

Asn Ser Ala Pro Glu Ser Thr Ser Lys His Lys Ser Pro Arg Arg Arg
 500 505 510

Lys Lys Arg Val Thr Ile Lys Pro Val Arg Phe Gly Ile Phe Leu Leu
 515 520 525

Cys Leu Ala Gly Ile Val Gly Gly Ala Thr Ala Leu Ile Ile Asn Arg
 530 535 540

Thr Gly Asp Pro Leu Gly Gly Leu Leu Glu Asp Pro Leu Asp Val Phe
 545 550 555 560

Leu Asp Gln Pro Ser Glu Phe Ile Pro Asp Glu Ala Thr Ser Arg Asn
 565 570 575

Leu Ile Leu Ser Gln Pro Asn Phe Asn Gln Gln Val Gly Gln Met Val
580 585 590

Val Gln Gly Trp Leu Asp Ser Lys Lys Leu Ala Phe Gly Gln Asn Tyr
595 600 605

Asp Val Gly Ala Leu Gln Ser Val Leu Ala Pro Asn Leu Leu Ala Gln
610 615 620

Gln Arg Gly Arg Ala Gln Arg Asp Gln Ala Gln Lys Val Tyr His Gln
625 630 635 640

Tyr Glu His Lys Leu Gln Ile Leu Ala Tyr Gln Val Asn Pro Gln Asp
645 650 655

Pro Asn Arg Ala Thr Val Thr Ala Arg Val Glu Glu Ile Ser Gln Pro
660 665 670

Phe Thr Leu Gly Asn Gln Gln Gln Lys Gly Ser Ala Thr Lys Asp Asp
675 680 685

Leu Thr Val Arg Tyr Gln Leu Val Arg His Gln Gly Val Trp Lys Ile
690 695 700

Asp Gln Ile Gln Val Val Asn Gly Pro Arg
705 710

<210> 171
<211> 819
<212> PRT
<213> Arabidopsis thaliana

<400> 171

Met Pro Val Ala Tyr Thr Phe Pro Val Leu Pro Ser Ser Cys Leu Leu
1 5 10 15

Cys Gly Ile Ser Asn Arg Ser Thr Ser Phe Val Val Asp Arg Pro Glu
20 25 30

Leu Gln Ile Ser Gly Leu Leu Val Val Arg Ser Glu Ser Gly Glu Phe
35 40 45

Phe Gly Ser Gly Leu Ser Leu Arg Arg Phe Gln Arg Glu Gly Arg Arg
50 55 60

Arg	Leu	Asn	Ala	Ala	Gly	Gly	Gly	Ile	His	Val	Val	Asp	Asn	Ala	Pro	65	70	75	80
Ser	Arg	Thr	Ser	Ser	Leu	Ala	Ala	Ser	Thr	Ser	Thr	Ile	Glu	Leu	Pro	85	90	95	
Val	Thr	Cys	Tyr	Gln	Leu	Ile	Gly	Val	Ser	Glu	Gln	Ala	Glu	Lys	Asp	100	105	110	
Glu	Val	Val	Lys	Ser	Val	Ile	Asn	Leu	Lys	Lys	Thr	Asp	Ala	Glu	Glu	115	120	125	
Gly	Tyr	Thr	Met	Glu	Ala	Ala	Ala	Ala	Arg	Gln	Asp	Leu	Leu	Met	Asp	130	135	140	
Val	Arg	Asp	Lys	Leu	Leu	Phe	Glu	Ser	Glu	Tyr	Ala	Gly	Asn	Leu	Lys	145	150	155	160
Glu	Lys	Ile	Ala	Pro	Lys	Ser	Pro	Leu	Arg	Ile	Pro	Trp	Ala	Trp	Leu	165	170	175	
Pro	Gly	Ala	Leu	Cys	Leu	Leu	Gln	Glu	Val	Gly	Gln	Glu	Lys	Leu	Val	180	185	190	
Leu	Asp	Ile	Gly	Arg	Ala	Ala	Leu	Arg	Asn	Leu	Asp	Ser	Lys	Pro	Tyr	195	200	205	
Ile	His	Asp	Ile	Phe	Leu	Ser	Met	Ala	Leu	Ala	Glu	Cys	Ala	Ile	Ala	210	215	220	
Lys	Ala	Ala	Phe	Glu	Val	Asn	Lys	Val	Ser	Gln	Gly	Phe	Glu	Ala	Leu	225	230	235	240
Ala	Arg	Ala	Gln	Ser	Phe	Leu	Lys	Ser	Lys	Val	Thr	Leu	Gly	Lys	Leu	245	250	255	
Ala	Leu	Leu	Thr	Gln	Ile	Glu	Glu	Ser	Leu	Glu	Gly	Leu	Ala	Pro	Pro	260	265	270	
Cys	Thr	Leu	Asp	Leu	Leu	Gly	Leu	Pro	Arg	Thr	Pro	Glu	Asn	Ala	Glu	275	280	285	

Arg Arg Arg Gly Ala Ile Ala Ala Leu Arg Glu Leu Leu Arg Gln Gly
 290 295 300
 Leu Ser Val Glu Ala Ser Cys Gln Ile Gln Asp Trp Pro Cys Phe Leu
 305 310 315 320
 Ser Gln Ala Ile Ser Arg Leu Leu Ala Thr Glu Ile Val Asp Leu Leu
 325 330 335
 Pro Trp Asp Asp Leu Ala Ile Thr Arg Lys Asn Lys Lys Ser Leu Glu
 340 345 350
 Ser His Asn Gln Arg Val Val Ile Asp Phe Asn Cys Phe Tyr Met Val
 355 360 365
 Leu Leu Gly His Ile Ala Val Gly Phe Ser Gly Lys Gln Asn Glu Thr
 370 375 380
 Ile Asn Lys Ala Lys Thr Ile Cys Glu Cys Leu Ile Ala Ser Glu Gly
 385 390 395 400
 Val Asp Leu Lys Phe Glu Glu Ala Phe Cys Ser Phe Leu Leu Lys Gln
 405 410 415
 Gly Ser Glu Ala Glu Ala Leu Glu Lys Leu Lys Gln Leu Glu Ser Asn
 420 425 430
 Ser Asp Ser Ala Val Arg Asn Ser Ile Leu Gly Lys Glu Ser Arg Ser
 435 440 445
 Thr Ser Ala Thr Pro Ser Leu Glu Ala Trp Leu Met Glu Ser Val Leu
 450 455 460
 Ala Asn Phe Pro Asp Thr Arg Gly Cys Ser Pro Ser Leu Ala Asn Phe
 465 470 475 480
 Phe Arg Ala Glu Lys Lys Tyr Pro Glu Asn Lys Lys Met Gly Ser Pro
 485 490 495
 Ser Ile Met Asn His Lys Thr Asn Gln Arg Pro Leu Ser Thr Thr Gln
 500 505 510
 Phe Val Asn Ser Ser Gln His Leu Tyr Thr Ala Val Glu Gln Leu Thr
 515 520 525

Pro Thr Asp Leu Gln Ser Pro Val Val Ser Ala Lys Asn Asn Asp Glu
 530 535 540

Thr Ser Ala Ser Met Pro Ser Val Gln Leu Lys Arg Asn Leu Gly Val
 545 550 555 560

His Lys Asn Lys Ile Trp Asp Glu Trp Leu Ser Gln Ser Ser Leu Ile
 565 570 575

Gly Arg Val Ser Val Val Ala Leu Leu Gly Cys Thr Val Phe Phe Ser
 580 585 590

Leu Lys Leu Ser Gly Ile Arg Ser Gly Arg Leu Gln Ser Met Pro Ile
 595 600 605

Ser Val Ser Ala Arg Pro His Ser Glu Ser Asp Ser Phe Leu Trp Lys
 610 615 620

Thr Glu Ser Gly Asn Phe Arg Lys Asn Leu Asp Ser Val Asn Arg Asn
 625 630 635 640

Gly Ile Val Gly Asn Ile Lys Val Leu Ile Asp Met Leu Lys Met His
 645 650 655

Cys Gly Glu His Pro Asp Ala Leu Tyr Leu Lys Ser Ser Gly Gln Ser
 660 665 670

Ala Thr Ser Leu Ser His Ser Ala Ser Glu Leu His Lys Arg Pro Met
 675 680 685

Asp Thr Glu Glu Ala Glu Glu Leu Val Arg Gln Trp Glu Asn Val Lys
 690 695 700

Ala Glu Ala Leu Gly Pro Thr His Gln Val Tyr Ser Leu Ser Glu Val
 705 710 715 720

Leu Asp Glu Ser Met Leu Val Gln Trp Gln Thr Leu Ala Gln Thr Ala
 725 730 735

Glu Ala Lys Ser Cys Tyr Trp Arg Phe Val Leu Leu His Leu Glu Val
 740 745 750

Leu Gln Ala His Ile Phe Glu Asp Gly Ile Ala Gly Glu Ala Ala Glu
755 760 765

Ile Glu Ala Leu Leu Glu Glu Ala Ala Glu Leu Val Asp Glu Ser Gln
770 775 780

Pro Lys Asn Ala Lys Tyr Tyr Ser Thr Tyr Lys Ile Arg Tyr Ile Leu
785 790 795 800

Lys Lys Gln Glu Asp Gly Leu Trp Lys Phe Cys Gln Ser Asp Ile Gln
805 810 815

Ile Gln Lys

<210> 172
<211> 2857
<212> DNA
<213> Arabidopsis thaliana

<400> 172
actgtcaaaa ctcaaaagcc ttgagaccaa atttcogatt ttttctcctc tgaagaaatc 60
caacaaattg taccatgatt ccagcttcac tctacttctt ctagggttcg ttcgttttct 120
ggagctgttg cgcaatgccg gtagcttaca catttccagt tctcccttct tcttgtctgc 180
tttgcggaat ctccaatcgc agcaccagct tcgtcgtaga tgcgccggag cttcagatct 240
caggtctcct cgtcgttcgt tctgaatccg gtgaattctt cggttctggt ttatctttgc 300
ggcggtttca gcgagaagga cggaggaggt tgaatgctgc tggtggtggt atccatgtcg 360
tcgacaatgc gccgtctcgt acttcttctc tcgctgcac tacctctaca atcgaaactcc 420
cggttacgtg ttaccagctt atcggagttt ctgagcaagc tgagaaagac gaggtcgtta 480
agtcggttat aaatttgaaa aaaactgatg ctgaagaggg ttatacaatg gaagctgctg 540
cagctcgcca ggatcttctc atggatgtta gggataaact tctttttgaa tcagaatatg 600
ctggtaacct aaaagaaaag attgctccta aatctcctct cagaattccg tgggcatggt 660
tgccctggtgc tctatgcctt cttcaagagg ttggacaaga aaaacttggt ctggatattg 720
gccgggctgc tctcaggaac cttgattcaa agccatatat tcatgatata ttcttatcta 780
tggaacttgc tgagtgtgca attgccaaagg ctgctttcga ggtaacaag gtctctcaag 840
gatttgaagc tcttgcctgt gctcaaagtt ttctgaagag taaagttact cttgggaaac 900
ttgcattggt aactcagatt gaggagtcac tagaggggct tgcaccacct tgcacattgg 960

atctactggg cctgccacgc acgccagaaa atgcagagag gaggcgaggt gcaattgccg	1020
cgctacgcga actgctcaga cagggcctta gtgttgaagc ttcattgtcaa attcaagact	1080
ggccatgctt tttgagccag gcaattagca ggttattggc cacagagatt gtcgatcttc	1140
ttccatggga tgatttagcc attacacgga aaaataaaaa atcactggaa tcccacaatc	1200
aaagagtgtg tattgatttt aattgtttct acatgggtgtt acttggtcac atcgctgttg	1260
gattttcagg caagcaaaat gaaacgatta ataaagcaaa aacgatatgc gaatgtctca	1320
tagcatcaga aggtgttgat ctgaaatttg aggaagcttt ttgctcattt cttctaaaac	1380
agggttccga ggcagaggcc ctggaaaaac ttaagcagct ggaatcaaat tcagactctg	1440
ccgttcgtaa ttcgatcttg gggaaagagt cgagaagtac ttctgctact ccctcactgg	1500
aagcgtggct aatggagtcc gtgcttgcta actttccaga cacaaggggt tgttctccat	1560
ctttggccaa ttttttccgg gctgaaaaga aatatccaga aaacaagaaa atgggggtcac	1620
cttcgatcat gaatcataag acgaacaaaa gaccactttc cacaacacag ttcgtgaact	1680
cgtcacaaca tctttataca gctgtcgagc agttgacacc aacagatttg cagagcccag	1740
tggtatcagc caagaataat gatgaaacca gtgccagtat gccatctgtt caactgaaga	1800
ggaaccttgg tgtacacaaa aataaaatat gggatgagtg gctctctcaa agcagtttga	1860
tcggaaggggt atctgttggt gctttacttg gttgcaccgt gttcttctct ctgaagctat	1920
caggcattag gtctggtaga ctacagagta tgcctatata gggttctgct aggccgcatt	1980
cagaatcaga ttcttttctg tggaaaacag agtctgggaa tttcagaaaa aaccttgatt	2040
ctgtgaatag aaatgggtatc gtgggaaaca tcaaagtgtc cattgacatg ttaaagatgc	2100
attgtggcga acatccggat gccctgtatc tgaaaagctc tgggtcaatca gctacatcat	2160
tgtctcattc tgcgtcagaa ctgcataaga gaccaatgga tacagaagaa gcggaagagc	2220
ttgtgagaca gtgggaaaat gttaaggctg aagctcttgg accaacacat caagtttata	2280
gcctttccga agtccttgat gaatccatgc ttgtccagtg gcaaacattg gcacaaacag	2340
cagaggcgaa atcctgttat tggagggttcg ttctgcttca tcttgagggt ttgcaagcac	2400
atatattcga agatggtatt gctggtgagg ctgcagaaat cgaagctctt ctggaggaag	2460
cagcagaatt agttgatgaa tctcagccca aaaacgcaaa atattatagc acttacaaga	2520
tccgatatat tctgaagaag caagaagatg gattgtggaa attctgccaa agcgatattc	2580
aaatacagaa gtgaaaatcc cccagaaaaa aaagctcatc atctaactaa aggttgtagc	2640
atcaacagta gaacatggga tcatttagct aacgggtgtt cttgtttacc taacggtgta	2700

ggaaagtctc aggtttgttt ctttattcct tagtaaccca caggatttgt cttttagat 2760
tcttttgatt tcaatgtgtt tatggataaa caaacttctt gagtattttt tttattatta 2820
ttgtaaagcg ttactgatca caaaaaaaaa aaaaaaa 2857

<210> 173
<211> 819
<212> PRT
<213> Arabidopsis thaliana

<400> 173

Met Pro Val Ala Tyr Thr Phe Pro Val Leu Pro Ser Ser Cys Leu Leu
1 5 10 15

Cys Gly Ile Ser Asn Arg Ser Thr Ser Phe Val Val Asp Arg Pro Glu
20 25 30

Leu Gln Ile Ser Gly Leu Leu Val Val Arg Ser Glu Ser Gly Glu Phe
35 40 45

Phe Gly Ser Gly Leu Ser Leu Arg Arg Phe Gln Arg Glu Gly Arg Arg
50 55 60

Arg Leu Asn Ala Ala Gly Gly Gly Ile His Val Val Asp Asn Ala Pro
65 70 75 80

Ser Arg Thr Ser Ser Leu Ala Ala Ser Thr Ser Thr Ile Glu Leu Pro
85 90 95

Val Thr Cys Tyr Gln Leu Ile Gly Val Ser Glu Gln Ala Glu Lys Asp
100 105 110

Glu Val Val Lys Ser Val Ile Asn Leu Lys Lys Thr Asp Ala Glu Glu
115 120 125

Gly Tyr Thr Met Glu Ala Ala Ala Arg Gln Asp Leu Leu Met Asp
130 135 140

Val Arg Asp Lys Leu Leu Phe Glu Ser Glu Tyr Ala Gly Asn Leu Lys
145 150 155 160

Glu Lys Ile Ala Pro Lys Ser Pro Leu Arg Ile Pro Trp Ala Trp Leu
165 170 175

Pro	Gly	Ala	Leu	Cys	Leu	Leu	Gln	Glu	Val	Gly	Gln	Glu	Lys	Leu	Val	180	185	190
Leu	Asp	Ile	Gly	Arg	Ala	Ala	Leu	Arg	Asn	Leu	Asp	Ser	Lys	Pro	Tyr	195	200	205
Ile	His	Asp	Ile	Phe	Leu	Ser	Met	Ala	Leu	Ala	Glu	Cys	Ala	Ile	Ala	210	215	220
Lys	Ala	Ala	Phe	Glu	Val	Asn	Lys	Val	Ser	Gln	Gly	Phe	Glu	Ala	Leu	225	230	235
Ala	Arg	Ala	Gln	Ser	Phe	Leu	Lys	Ser	Lys	Val	Thr	Leu	Gly	Lys	Leu	245	250	255
Ala	Leu	Leu	Thr	Gln	Ile	Glu	Glu	Ser	Leu	Glu	Gly	Leu	Ala	Pro	Pro	260	265	270
Cys	Thr	Leu	Asp	Leu	Leu	Gly	Leu	Pro	Arg	Thr	Pro	Glu	Asn	Ala	Glu	275	280	285
Arg	Arg	Arg	Gly	Ala	Ile	Ala	Ala	Leu	Arg	Glu	Leu	Leu	Arg	Gln	Gly	290	295	300
Leu	Ser	Val	Glu	Ala	Ser	Cys	Gln	Ile	Gln	Asp	Trp	Pro	Cys	Phe	Leu	305	310	315
Ser	Gln	Ala	Ile	Ser	Arg	Leu	Leu	Ala	Thr	Glu	Ile	Val	Asp	Leu	Leu	325	330	335
Pro	Trp	Asp	Asp	Leu	Ala	Ile	Thr	Arg	Lys	Asn	Lys	Lys	Ser	Leu	Glu	340	345	350
Ser	His	Asn	Gln	Arg	Val	Val	Ile	Asp	Phe	Asn	Cys	Phe	Tyr	Met	Val	355	360	365
Leu	Leu	Gly	His	Ile	Ala	Val	Gly	Phe	Ser	Gly	Lys	Gln	Asn	Glu	Thr	370	375	380
Ile	Asn	Lys	Ala	Lys	Thr	Ile	Cys	Glu	Cys	Leu	Ile	Ala	Ser	Glu	Gly	385	390	395
Val	Asp	Leu	Lys	Phe	Glu	Glu	Ala	Phe	Cys	Ser	Phe	Leu	Leu	Lys	Gln	405	410	415

Gly	Ser	Glu	Ala	Glu	Ala	Leu	Glu	Lys	Leu	Lys	Gln	Leu	Glu	Ser	Asn	420	425	430	
Ser	Asp	Ser	Ala	Val	Arg	Asn	Ser	Ile	Leu	Gly	Lys	Glu	Ser	Arg	Ser	435	440	445	
Thr	Ser	Ala	Thr	Pro	Ser	Leu	Glu	Ala	Trp	Leu	Met	Glu	Ser	Val	Leu	450	455	460	
Ala	Asn	Phe	Pro	Asp	Thr	Arg	Gly	Cys	Ser	Pro	Ser	Leu	Ala	Asn	Phe	465	470	475	480
Phe	Arg	Ala	Glu	Lys	Lys	Tyr	Pro	Glu	Asn	Lys	Lys	Met	Gly	Ser	Pro	485	490	495	
Ser	Ile	Met	Asn	His	Lys	Thr	Asn	Gln	Arg	Pro	Leu	Ser	Thr	Thr	Gln	500	505	510	
Phe	Val	Asn	Ser	Ser	Gln	His	Leu	Tyr	Thr	Ala	Val	Glu	Gln	Leu	Thr	515	520	525	
Pro	Thr	Asp	Leu	Gln	Ser	Pro	Val	Val	Ser	Ala	Lys	Asn	Asn	Asp	Glu	530	535	540	
Thr	Ser	Ala	Ser	Met	Pro	Ser	Val	Gln	Leu	Lys	Arg	Asn	Leu	Gly	Val	545	550	555	560
His	Lys	Asn	Lys	Ile	Trp	Asp	Glu	Trp	Leu	Ser	Gln	Ser	Ser	Leu	Ile	565	570	575	
Gly	Arg	Val	Ser	Val	Val	Ala	Leu	Leu	Gly	Cys	Thr	Val	Phe	Phe	Ser	580	585	590	
Leu	Lys	Leu	Ser	Gly	Ile	Arg	Ser	Gly	Arg	Leu	Gln	Ser	Met	Pro	Ile	595	600	605	
Ser	Val	Ser	Ala	Arg	Pro	His	Ser	Glu	Ser	Asp	Ser	Phe	Leu	Trp	Lys	610	615	620	
Thr	Glu	Ser	Gly	Asn	Phe	Arg	Lys	Asn	Leu	Asp	Ser	Val	Asn	Arg	Asn	625	630	635	640

Gly Ile Val Gly Asn Ile Lys Val Leu Ile Asp Met Leu Lys Met His
645 650 655

Cys Gly Glu His Pro Asp Ala Leu Tyr Leu Lys Ser Ser Gly Gln Ser
660 665 670

Ala Thr Ser Leu Ser His Ser Ala Ser Glu Leu His Lys Arg Pro Met
675 680 685

Asp Thr Glu Glu Ala Glu Glu Leu Val Arg Gln Trp Glu Asn Val Lys
690 695 700

Ala Glu Ala Leu Gly Pro Thr His Gln Val Tyr Ser Leu Ser Glu Val
705 710 715 720

Leu Asp Glu Ser Met Leu Val Gln Trp Gln Thr Leu Ala Gln Thr Ala
725 730 735

Glu Ala Lys Ser Cys Tyr Trp Arg Phe Val Leu Leu His Leu Glu Val
740 745 750

Leu Gln Ala His Ile Phe Glu Asp Gly Ile Ala Gly Glu Ala Ala Glu
755 760 765

Ile Glu Ala Leu Leu Glu Glu Ala Ala Glu Leu Val Asp Glu Ser Gln
770 775 780

Pro Lys Asn Ala Lys Tyr Tyr Ser Thr Tyr Lys Ile Arg Tyr Ile Leu
785 790 795 800

Lys Lys Gln Glu Asp Gly Leu Trp Lys Phe Cys Gln Ser Asp Ile Gln
805 810 815

Ile Gln Lys

<210> 174
<211> 491
<212> DNA
<213> Triticum aestivum

<220>
<221> misc_feature
<222> (22)..(22)
<223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (451)..(451)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (471)..(471)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (483)..(484)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (487)..(487)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (489)..(490)
 <223> n is a, c, g, or t

<400> 174
 ggccgctcggc aaatactgca gnttgcacat gatactctca caaaccagag ctcccgcacc 60
 gagtatgacc ggcgcgtctc tgaggaccgt gacgcggcgc tcacactgga tgttgcttgg 120
 gacaagggttc cgggtgtgct atgtgccctt caggaggctg gggaggcaca ggagtgctt 180
 gcaattggag agcacttact ggaggaccgc ccgcccgaagc ggttcaagca ggatgtggtg 240
 ctggcaatgg cgctcgctta tgtggacata tcaagggatg caatggcggc tagccctcca 300
 gatgtaatcc gctgctgtga ggtgcttgaa agggctctca agctcttgca ggaggatggg 360
 gcaatcaacc ttgcacctgg tctgctttca caaattgatg aaactctgga ggagatcaca 420
 cctcgttgtg ttttgagct tcttgccctt nctcttgatg aaaaacatca nattgaacgc 480
 cannaangnn t 491

<210> 175
 <211> 545
 <212> DNA
 <213> Gossypium arboreum

<220>
 <221> misc_feature
 <222> (528)..(528)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature

```

<222> (536)..(536)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (540)..(540)
<223> n is a, c, g, or t

<400> 175
aattgcagaa ggcattgttc gcaagtggca gaacattaaa tctgaggcgt ttggacctga      60
tcaccgcctt gataaattgc cagaggttct ggatgggtcaa atgttgaaga catggacaga      120
tcgtgcagcc gaaatcgctc agcttgggtg ggtatatgaa tatagtctac tgaacatggc      180
cattgacagt gttacccttt cactagatgg ccagegagct gtagtcgaag ctactctgga      240
agaatccacc tgcttgactg atgttcatca tccggagaac aatgcctcta atgtaaactc      300
ctacaccacg agatatgaga tgtcttggtc caactcaggc tggaaaatca ctgaaggatc      360
tgtctacaaa tcttaactat gatgtataaa gcataaaaag cctgaaagct ccaatgtggt      420
taccagcttt gcctttttac gtagctatat ttgttatatt gtttgagaaa acaagagtta      480
gcgttttcca gtcatgcaag cagttcaa ataaaagaggc aatgcttntc atgganaacn      540
aatg                                             545

<210> 176
<211> 420
<212> DNA
<213> Hordeum vulgare

<400> 176
gatgagccca tacagattcc taaaatggat gcgaagctgg cagaagatat tgttcgcaag      60
tggcagagca tcaaatccaa ggccttggga tcagatcatt ctgttgcatc attgcaagag      120
gttcttgatg gcaacatgct gaagggtatgg acagaccgag cagcagagat tgagcgcaaa      180
ggctgggttct gggactacac gctgttcaac gtggcgatcg acagcatcac cgtctccctg      240
gacggacggc gggcgaccgt ggaggcgaca attgaggagg cgggtcagct caccgacgca      300
accgacccca ggaacgatga tttgtacgac actaagtaca ccaccggta cgagatggcc      360
ttcaccggac caggaggggtg gaagataacc gaaggcgag tcctcaagtc gtcatagggc      420

<210> 177
<211> 606
<212> DNA
<213> Triticum aestivum

```

<400> 177
 ctgcaaactc agcactatgt ttctctttat ctccaggatc tagcctagca ccaacaatcc 60
 aaatacaaca caagaaaaat aaagctcttc gtcgatcaca tcagactaac gcaactatcg 120
 gtcttccaaa ctaaaaaggg cctagactgc ctgcttattt acacaccccc aaaagaaaac 180
 tggaaggaat taacaaactt aatgagggtta ccgcacacca actaccctaa gacgacttga 240
 ggaccgcgcc ttccattatc ttccaccctc ctagtccggt gaaggatcgc tcataccggg 300
 tgggtgtactt cgtgtcgtac gagtcgttgt tcttgggggc ggttgcgtcg atgagctggc 360
 ctgcctcctc gatcgttgcc tccacggcgc ccgcgcgtcc gtccagggag accgtgatgc 420
 tgtcgatcgc cacgtcagac agtgtgtagt ccagaacca gcctttgcgc ccgatctccg 480
 ctgctcgggc cgtccatacc ttcagcatgt tgccatcaag aacctcttgc aatgattcca 540
 cagaatgatc tgatcccaag gccttggttt tgatactctg ccacttgcca acaatatctt 600
 ctgcca 606

<210> 178
 <211> 563
 <212> DNA
 <213> *Gossypium arboreum*

<400> 178
 tttttttttt tttttttttt tttttttttt ttttttttaa cttgcctctt ttaatttgaa 60
 ctgcttgcct gactggaaaa ccctaactct tgttttctca aacaatttaa caaatatagc 120
 tccctaaaaa ggcaaagctg gtaaccacat tggagctttc aggcctttta tgctttatac 180
 atcatagtta aaatttgtag acagatcctt cagtgatctt ccaacctgag ttggaacaaa 240
 acatctcata tttcgtgggg taggagttta cattacaggc attgttctcc ggatgatgaa 300
 cattactcaa gccggggggg tcttccaaaa taacttcgac tacagctcgc tggccattta 360
 atgaaagggg aacctgtca atggccctgt tcagtcaact ttattcatat acccaaccca 420
 gctgaccgat ttcggctgca ccaactgtcc atgttttcaa catttgacca tccaaaacct 480
 ttggcaattt atcaaggggg ggatcaagtc caaacgcctc agatttaatg ttctgccact 540
 tgcgaacaat gccttttgca att 563

<210> 179
 <211> 360
 <212> DNA
 <213> *Hordeum vulgare*

<400> 179
gatgagccca tacagattcc taaaatggat gcgaagctgg cagaagatat tgttcgcaag 60
tggcagagca tcaaataccaa ggccttggga tcagatcatt ctgttgcac attgcaagag 120
gttcttgatg gcaacatgct gaaggatgg acagaccgag cagcagagat tgagcgcaaa 180
ggctggttct gggactacac gctgttcaac gtggcgatcg acagcatcac cgtctccctg 240
gacggacggc gggcgaccgt ggaggcgaca attgaggagg cgggtcagct caccgacgca 300
accgacccca ggaacgatga tttgtacgac actaagtaca ccacccggta cgagatggcc 360

<210> 180
<211> 300
<212> DNA
<213> *Hordeum vulgare*

<400> 180
tgatggcaac atgctgaagg tatggacaga ccgagcagca gagattgagc gcaaaggctg 60
gttctgggac tacacgctgt tcaacgtggc gatcgacagc atcaccgtct ccctggacgg 120
acggcggggc accgtggagg cgacaattga ggaggcgggt cagctcaccg acgcaaccga 180
ccccaggaac gatgatttgt acgacactaa gtacaccacc cggtagcaga tggccttcac 240
cggaccagga ggggtggaaga taaccgaagg cgcagtcctc aagtcgtcat agggcgttca 300

<210> 181
<211> 549
<212> DNA
<213> *Triticum monococcum*

<400> 181
tttttttttt tttttttttt ttttttttca gcggaatt cagcactatg tttctcttat 60
ccccaaactca aagatcttct aagctagcaa taatccgaaa acgacacagg gaaaaacaaa 120
gtcctcgtct gattgcacat cagactaacc aaactatctc caacttccaa actgagaagg 180
gcctagactg cttatttaca caccaaaaag aacacgggag gaatcaatca acaaaggctct 240
actgcacacc gaacgccta tgacgacttg aggaccgcac cttctgttat cttccaccct 300
cctgggtccag tgaaggatcat ctcgtagcgg gtggtgtact tagtgtagta caaatcggtg 360
ttcctggggg cggttgcatc ggtaagctgg cctgcctcct caattgtcgc ctccacagtc 420
gcccgtcgtc cgtccaggga gacggtgatg ctgtcaatcg ccacgtcgga cagcgtgtag 480
tcccagaacc agcctttgag ctgatctct gctgctcggg cctccatac cttcagcatg 540
ttgccatca 549

<210> 182
 <211> 573
 <212> DNA
 <213> Hordeum vulgare

<220>
 <221> misc_feature
 <222> (6)..(6)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (16)..(16)
 <223> n is a, c, g, or t

<400> 182
 gcgagnaagg acgagnatcg tcaagtcggc catcgagctg aggaaatcgg agatcgaaga 60
 tgggtacacg gaggaggtgt ccacctgcag acaggctctg ctgctggacg tgagagacaa 120
 gcttctcttt gaacaggagt acgcaggaag caccagggcc aaggttccgc ccagatcctc 180
 tcttcatata ccctggagct ggttgccctg tgccttgtgt gtcttgcagg aggttgggga 240
 agagaagctg gtcttggaca ttggtcaggc agctctacga cgccctgatt ctaagccata 300
 tgctcacgat gtacttcttg caatggcact agctgaatgc tccattgcaa aagctagctt 360
 tgaaaaaagt aaagtatctc ttggctttga ggctctagca cgtgctcaat atcttttgag 420
 gaaaaaacca tctttagaga agatgcctct tcttgagcag atcgaagaat cacttgaaga 480
 gcttgcacca gcttgcactc tagaggtttt aagcctgccc cgtacacctg aaaattctga 540
 acgcaggcgt ggtgctattg cagctctctg tga 573

<210> 183
 <211> 400
 <212> DNA
 <213> Beta vulgaris

<400> 183
 gcataacacg gcaagaagat gttgcagtta atggcttttg aaatgaggat gttacaatgg 60
 agcttggccg tgataacact ttagattatg tgaatttagc cagttcaa at tttactgaag 120
 ataatatcga gcaagaatcg gttactgaga agataaaaga tttagggtgtg aagggttatgt 180
 gtgccggtgt ggtgattgga ctgacaactt tggctggcat gaaacttttg cctggcagaa 240
 gtgggtctgc cattccacac aggcattctg gttctgctgt ggcttctgat gtctccagt 300
 tggggctctc agtaaatgaa actactgagg agaaagtacc aaaaatggat gcaagacttg 360
 cagaagttct agttagaaga tggcagaacg ttaaatacaca 400

<210> 184
 <211> 631
 <212> DNA
 <213> *Prunus persica*

<220>
 <221> misc_feature
 <222> (21)..(21)
 <223> n is a, c, g, or t

<400> 184
 gcagttgcaa ttgctggggg ngattcacta cgtgaaaatt tcatgaacga ggccttcttg 60
 catatgactg cagctgagca ggttgattta tttgtagcta cccccagtaa tatcccggca 120
 gaaagctttg aagtttatgg ggtggctctt gcgcttggtg ctcaagcctt tgttggtaaa 180
 aaacctcatc acattcaaga tgctgaaaac ctattccaga aacttcagca gtctaaggta 240
 acagctgtag gacattctct tgacaactat ataaccaaag aaagcagtga gatagacttt 300
 gctttggaga ggggactctg ttcacttctt ctaggggacc ttgatgacag tcgttcgtgg 360
 ttgggcctag acagtaatga ttcaccatat agaaatccat ctggtgtaga ctttgtcttg 420
 gagaactcaa aggatgacga tgacaatgac aatgacaatg atcttcctgg actttgcaag 480
 ctattggaga cgtgggtgat ggaggtggta ttccccaggt ttagagacac caaagacata 540
 gagttcagac tgggagacta ctatgatgat cctacagtct tgagatactt agaaaggctg 600
 gatggcacta atggttcacc cttagctgct g 631

<210> 185
 <211> 647
 <212> DNA
 <213> *Helianthus annuus*

<400> 185
 cagaaagagg tggctggatt gatgactttg gctggcttga aatttatacc gtcttaaaca 60
 ggctctacta gtactactgc tcgtaaagaa gttgattcgg ctctggcttc agacgtcacc 120
 aatgtggagg attctagggt tgaggatgct gaagacattc ctaaaatgga tgcaagatta 180
 gccgaaggtc tagttcgtaa gtggcagagc ataaaatccc aagcccttgg acctgagcat 240
 tgccactcaa aattatcata ggtattagat ggtgaaatgc acaagatctg gcttcaacgg 300
 gcaaccgaaa ttgctcaacg tggttggttt tgggactaca cgctttttaa cattaccatt 360
 gacagtgtta ccgtttcact cgatgggcgc ttagctggtg tggaagcaac ccttgaagag 420
 tctgccaaagt tgattgattt gacccacccg gaaaacaatg actcctataa ttttaacttac 480
 accacacggt atgagatgtc gtgtgccaaag tcatcatgga aaatcacaaa gggggctgtc 540

ctcaaatcat aacagatgta attctttctc accttttctg tatttatctg ttattagatt 600
actcagcagt tgaatgatat gtttctccac catttcgatc atgagcg 647

<210> 186
<211> 652
<212> DNA
<213> Helianthus annuus

<400> 186
tgtggtggtt ggattgatga ctttggtctg cttgaaattt acaccgtcca aaagaggctc 60
tactagtact actgctcgta aagaagttga ttcggtctctg gcttcagacg tcaccaatag 120
gattctaggg ttgaggatgc tgaagacatt cctaaaatgg atgcaagatt agccgagggg 180
ctagtctgta agtggcagag cataaaatcc caagcccttg gacctgagca ttgccactca 240
aaattatcag aggtattaga tggtgaaatg cacaagatct ggcttcaacg ggcaaccgaa 300
attgctcaac gtggttggtt ttgggactac acgcttttaa acattaccat tgacagtgtt 360
accgtctcac tcgatgggcg cttagctgtt gtggaagcaa cccttgaaga gtctgccaa 420
ttgattgatt tgacccaccc ggaaaacaat gactcctata atttaactta caccacacgt 480
tatgagatgt cgtgtgcaa gtcttcatgg aaaatcacia agggggctgt cctcaaatca 540
taacagatgt aattctttct caccttttct gtatttaact gttattagat tactcagcag 600
ttgaatgata tgtttctcca ccatatcgat catgagtgtg tttggtgctg cc 652

<210> 187
<211> 460
<212> DNA
<213> Populus tremula

<400> 187
gactgaaaa ataaaagatg ccagtatcaa aatatgtgtg ctggtgtggc aattggactg 60
ctgacttttag ctggcctgaa gtgttttctt cctaggactg gctccttcat tcgacagaaa 120
gaaattggtt cggcaatggc atctgacacc atcaatttga attcagcagt agatgaacaa 180
atttccgagg acttaccag aatggatgca aggggtgcag aggatatagt tcgcaagtgg 240
caaaacatta aatctcaggc ttttggaaact gatcactgcc tggcaaaatt gccagaggtt 300
ttggatagtc agatgttgaa aatatggaca gatcgtgcgg ccgaaattgc acatcttgg 360
tgggtatacg agtatatgct gttggacctg actattgaca gtgtgactgt atctgtagat 420
ggcctaaatg ctgtagtaga agcaacactc aaagagtcaa 460

<210> 188
 <211> 3933
 <212> DNA
 <213> Chlamydomonas reinhardtii

<400> 188
 atgaactcgg cggagcacgt ctctgttgcc gtggactatt accgaatgct gcacgttccc 60
 cgcgtaagcc gccctgacgc cattcgcaag gcgtatgaga acctggtgaa gcaaccccc 120
 gctgccgcgt actctgcgga caccctcttc gcacgcgcgg tgctactcaa ggagccgcg 180
 gagtcgctga ccgacccgga cctgcgccgc tcatatgacg ccaagctggc cgctggtcac 240
 acagccctgc gcgtcagcca gcaggaccta cccggagccc ttgtcgtgct gcaggaggtg 300
 agccgtgctc tggcgaccgc tcaaccctt gcgaccgcta aaaccatcag cacatatagc 360
 acatataaat tcccatgggt tctgtactac cgccacccc tctgaagggg gcgagtattc 420
 attcttcacg catgagcgca gacttttacc ctatcaagtc ccgccctcgc ccgccttctc 480
 tccccacaga tcggcgagca ccagttgggt ctggatctgg gtctgcgctg gctagaggtg 540
 aacggcgggc agcccgacgc cggcgacgtg gccgctgccg tggccctggc ctactgtgac 600
 cgcgctggtg agcgccctac ctcccagctg cagccgccgc cggcctcagc gctgccaggc 660
 cccgatggcg cggcggtgcc gcacgcgcac gtgggcgcgg tgctgcccgc atgcgacgac 720
 ctggacgcag cgctgagcaa gctccggcgg tacggcatgg cgcagcagct gcagcagcag 780
 atcgtgggcg cgctgcgggt gaggctggag caggggctgg accggcaacc ggtcatagat 840
 gtagacacag ggatgtaggc gtcgatgcga ggggatggaa gtatggggtc ctgtgagtgt 900
 gagccgatgg aaggtataga tgctgggagc tggcgacccc gacccatgtc atccaaggac 960
 ttggctgatg catcgctcac ccccgccctc caaccggaat gccctcagga cctggcgcca 1020
 gagtacgcgt gcgagctggc cgccctgccg ctgggcgcgg agaccgccgc ccggcgcgcc 1080
 aagggcggtg cgctcatgcg cgggtgtgctg cgcgcgcgg ccaccgtggc cgccgccaca 1140
 gccaaagtagg tgacaagcac gcaggaaatc gtgtgctata ttgcattgcg gtaccttgcc 1200
 ttgcacgcg gaggcagtgc tcgagaatgc gtttcgtgcg cgtgatccgt ttgctcgtcg 1260
 tgcccttatcc gccaccccag gcccgaggct gctgctgacg acagcgacga cgacgaggtg 1320
 gacccgcgca gtgtgctggc ggccgcccgc cgcattgctga cccgcagccg cgacgtgctc 1380
 acctgcagcg agcaggtaca gcgctgcaac cgggcagtta tagatggatg caagtgcgtg 1440
 gacgccgaac gtacagtttt tgctgtgttc cccgcgtgca ccttagccgc tcctcctgca 1500
 accctcactt gcgacctcaa tgcgtgcacc ttagccgctc ctccctgcaac cctcagttgc 1560

gacctcacga	cacaccgtct	ggcttacccc	tgccccacc	ccaggtggcc	ctgctgccgg	1620
acgcgctgcg	cggcagcggg	gtgtcgccca	ccccggacgc	gctgtacgac	ggcgccctgg	1680
cgcacctggt	ggacggcttc	cgcaacgggt	ggccgcactc	cgtgcaccag	gtgggggagc	1740
gcggtgcctg	gatgtctgga	tggtcactgg	ccgcaagggt	gtgcgcacca	tcgggtagag	1800
tgtaaccaaa	tgatgtgcgc	gcaatgaagg	gtgagcagat	tccagcctcc	ctctgtcggc	1860
tggcgtccaa	ctgtgccaac	tgcgcacaca	cctgcgcacg	ccccaggccg	accagctgct	1920
ggccaagctg	gaggcgcagc	aggcccgcg	agccgccatg	cgcgcgcagc	agtccgagct	1980
ggccgcgcgc	gccgcagccc	gccgtgccat	gtacagcggg	cccgcgcgcg	cccacggctc	2040
cacctgttac	accaactaca	acaaccctgc	cggcagcggc	aatggcgcgc	cgcgcgcgc	2100
gccccgcccc	atgcccatgg	tgccaggggg	cgacggccag	cacgccatgg	cggcgtctgt	2160
ggcggcgcgc	gtgcactcca	cggcgatggc	ggagcacgcg	gcgcgcagcg	cggctggcgg	2220
cgcgcgcggc	gcctccgatg	gcggcgcgca	cgccaacggc	gtggctctag	agcgggcccgt	2280
gtgcgcgcgc	ctgctgggtg	actacaccgc	ggcgggtggag	cggctggggc	tagacacgaa	2340
cgcggcgggtg	gagcaggagc	agctgcgcga	gttcgtcctg	gtgcgccggg	gagggcctac	2400
tgcaaaacgt	gttgctcagg	gtcttgagat	accgaacaca	atgttttcgt	atacatctcc	2460
cgtcgagaga	gctatgcctc	caccgtcggc	ccggctccac	tgcacccgat	gcggttgagc	2520
gcccactcgc	ccaacggccg	cggcgacctg	cgcgcggggc	tgagggcgct	ggccacccgc	2580
tggctggagg	gcgtggcgct	ggcgtccttc	cgcgcacctg	ccggcagccc	cgtgccgccc	2640
ctggaggcca	gctggttcgc	ggacctgcgt	gtcgccttct	atctgcaggt	gaggggcggc	2700
agaagagagg	ggggaaaggg	aggcgagaag	gcgcttccgc	cgtggcgca	acgggccatc	2760
ctggtggagc	acggcgctac	atcgcatctg	gtccaccgtc	tctggatgta	taattcgtgc	2820
actcttaacc	ggccgcgcag	gtatggcggc	tgtgccgcgt	ggagcagggtg	ctggccgccc	2880
cccacttcct	ggccaacctg	ctgcccacaa	tgtcaaggc	cacgcgcggc	actgccgtca	2940
aggtcgcagc	caacaccgcc	gtggcagcct	cccgcgcgca	gcgcctcagc	gccaccgtcg	3000
cggccagcac	cgcaccgcc	tcgtcatctt	cctctgcgcg	ccgcggcgct	cgtgccgggtg	3060
ccctgagcgc	tgccaccgcc	gccgcacacg	cgcgcgcgcg	ccagcaggcg	aacgcggctc	3120
gtgccagcat	cgtcgggtgt	gacgtgtgtc	ccccacagc	agtggccgcg	gctgccgcgg	3180
ctggcacagc	ggccgcgcgc	gcagtcaccg	gccccgcctt	cggccgtggc	gctgcagctt	3240
ccgcctcttc	ctttgaggag	ggcgcgcgtg	aggccgctga	cctgcgtcgt	cgttttgtcg	3300

ccaccagccg	cggcgccagc	gcggccgctg	gtgcgcccac	agcaccagcc	gctatgactg	3360
ggccccagca	cggcgccgcc	tctgctgcgc	agtcgcaccg	ggaggaggat	gaggattcgc	3420
acggcggcca	ggaggggggc	gtgccgcggc	gcatgagcga	ggcggacctg	cgtgcgcacc	3480
tggcgggctt	ggagaaggcc	atgtgggact	cggagctgcc	gccgccgccg	ccatcccgcg	3540
cgcagaaggc	gctcacctac	gccgcaggac	tggtgagttg	ctgcgcagcc	tgacggccat	3600
agttgccgta	gtgccatagt	gaccgagcac	cgtgatgttt	aggacatggg	cggagaagtg	3660
ttaggacatg	aattgcatca	acgctgcaaa	tctgggtgat	ggtacgcgcg	ttccctgtca	3720
ccaacaaggc	tgttgacca	gctgctgctg	cccttgcaact	ctttcaacgc	ccgtctgcag	3780
ctggccgtgg	tggtggcctt	cctgggtgtc	agcttcttcc	gccgcaacga	cggcgccgcc	3840
tccgccctgg	caccgcgcgc	cgtcaccacc	gcctccgtgg	ccgttagcgc	gcagcccgcc	3900
aagccgggca	aggccacccg	ctccgcgcac	tga			3933

<210> 189
 <211> 2511
 <212> DNA
 <213> Chlamydomonas reinhardtii

<400> 189	
atgaactcgg	cggagcacgt ctctgttgcc gtggactatt accgaatgct gcacgttccc 60
cgcgtaagcc	gccctgacgc cattcgcaag gcgtatgaga acctggtgaa gcaaccccc 120
gctgccgcgt	actctgcgga caccctcttc gcacgcgcgg tgctactcaa ggcagccgcg 180
gagtcgctga	ccgacccgga cctgcgcgcgc tcatatgacg ccaagctggc cgctggtcac 240
acagccctgc	gcgtcagcca gcaggacct cccggagccc ttgtcgtgct gcaggagatc 300
ggcgagcacc	agttggttct ggatctgggt ctgcgctggc tagaggtaaa cggcggccag 360
cccgcgcgcg	gcgacgtggc cgctgccgtg gccctggcct actgtgaccg cgctggtgag 420
cgcctcacct	cccagctgca gccgcgcgcg gcctcagcgc tgccaggccc cgatggcgcg 480
gcggtgccgc	acgcgcacgt gggcgcggtg ctgcccgcac gcgacgacct ggacgcagcg 540
ctgagcaagc	tccggcggtg cggcatggcg cagcagctgc agcagcagat cgtgggcgcg 600
ctgcgggacc	tggcgccaga gtacgcgtgc gagctggccg ccctgccgct gggcgccgag 660
accgcgcgcc	ggcgcgccaa gggcggtggc ctcatgcgcg gtgtgctgcg cgccgccgcc 720
accgtggccg	ccgccacagc caagcccag gctgctgctg acgacagcga cgacgacgag 780
gtggaccgcg	gcagtgtgct gggcgccgcc cgccgcacgc tgacccgcag ccgcgacgtg 840
ctcacctgca	gcgagcaggt ggccctgctg ccggacgcgc tgcgcggcag cgggtgtgctg 900

cccaccccg	acgcgctgta	cgacggcgcc	ctggcgccacc	tggtggacgg	cttccgcaac	960
ggctggccgc	actccgtgca	ccaggccgac	cagctgctgg	ccaagctgga	ggcgagcag	1020
gcccgcgag	ccgccatgcg	ccgcgagcag	tccgagctgg	ccgccgccgc	cgcagcccgc	1080
cgtgccatgt	acagcgggtcc	cgccgcgcgc	cacgggtccca	ccctgtacac	caactacaac	1140
aaccctgccg	gcagcggcaa	tggcgcgccg	ccgccgccgc	cccgcgccat	gcccattggtg	1200
cccagggggc	acggccagca	cgccatggcg	gcgtctgtgg	cggcgcatgt	gcaactccacg	1260
gcgatggcgg	agcacgcggc	gcgcagcgcg	gctggcgggc	ccgccggcg	ctccgatggc	1320
ggcgcgacg	ccaacggcgt	ggctctagag	cgggcccgtgt	gcgcgcgtcct	gctgggtgac	1380
tacaccgcgg	cggtggagcg	gctgggggcta	gacacgaacg	cggcgggtgga	gcaggagcag	1440
ctgcgcgagt	tcgtcctggc	ccactcgccc	aacggccgcg	gcgacctgcg	cccgggcctg	1500
agggcgctgg	ccaccgcgtg	gctggagggc	gtggcgctgg	cgtccttccg	cgacactgcc	1560
ggcagccccg	tgccgcgcgt	ggaggccagc	tggttcgcgg	acctgcgtgt	cgccttctat	1620
ctgcaggtat	ggcggtgtg	ccgcgtggag	caggtgctgg	ccgccgccca	cttcctggcc	1680
aacctgctgc	ccaacatgct	caaggccatc	gccggcactg	ccgtcaaggt	cgcagccaac	1740
accgcctgg	cagcctcccg	cgcgcagcg	ctcagcgcca	ccgtcgcggc	cagcaccgcc	1800
accgcctcgt	catcttctc	tgccgcccgc	ggcgctcgtg	ccggtgccct	gagcgctgcc	1860
accgcgcgcg	cacacgcgcg	gcgcgcgcag	caggcgaacg	cggtcggtgc	cagcatcgtc	1920
ggtgctgacg	tgctgcccc	cacagcagtg	gccgcggctg	ccgcggctgg	cacagcggcc	1980
gccgcgcgag	tcaccggccc	cgcctcggc	cgtggcgctg	cagcttccgc	ctcttctttt	2040
gaggagggcg	ccgctgaggc	cgctgacctg	cgtcgctcgt	ttgtcgccac	cagccgcggc	2100
gccagcgcg	ccgtcggtgc	gcccacagca	ccagccgcta	tgactggggc	ccagcacggc	2160
gccgcctctg	ctgcgcagtc	gcaccgggag	gaggatgagg	attcgcacgg	cggccaggag	2220
ggggcgctgc	cgcggcgcat	gagcgaggcg	gacctgcgtg	cgcacctggc	gggcctggag	2280
aaggccatgt	gggactcgga	gctgccgcgc	ccgcgcgccat	cccgcgcgca	gaaggcgctc	2340
acctacgcgc	caggactgct	ggccgtgggtg	gtggccttcc	tggtgtccag	cttcttccgc	2400
cgcaacgacg	gcgcgcctc	cgcctgggca	ccgcgcgcgc	tcaccaccgc	ctccgtggcc	2460
gttagcgcg	agcccgccaa	gccgggcaag	gccacccgct	ccgcgcactg	a	2511

<210> 190
 <211> 836
 <212> PRT
 <213> Chlamydomonas reinhardtii

<400> 190

Met Asn Ser Ala Glu His Val Ser Val Ala Val Asp Tyr Tyr Arg Met
 1 5 10 15

Leu His Val Pro Arg Val Ser Arg Pro Asp Ala Ile Arg Lys Ala Tyr
 20 25 30

Glu Asn Leu Val Lys Gln Pro Pro Ala Ala Ala Tyr Ser Ala Asp Thr
 35 40 45

Leu Phe Ala Arg Ala Val Leu Leu Lys Ala Ala Ala Glu Ser Leu Thr
 50 55 60

Asp Pro Asp Leu Arg Arg Ser Tyr Asp Ala Lys Leu Ala Ala Gly His
 65 70 75 80

Thr Ala Leu Arg Val Ser Gln Gln Asp Leu Pro Gly Ala Leu Val Val
 85 90 95

Leu Gln Glu Ile Gly Glu His Gln Leu Val Leu Asp Leu Gly Leu Arg
 100 105 110

Trp Leu Glu Val Asn Gly Gly Gln Pro Asp Ala Gly Asp Val Ala Ala
 115 120 125

Ala Val Ala Leu Ala Tyr Cys Asp Arg Ala Gly Glu Arg Leu Thr Ser
 130 135 140

Gln Leu Gln Pro Pro Pro Ala Ser Ala Leu Pro Gly Pro Asp Gly Ala
 145 150 155 160

Ala Val Pro His Ala His Val Gly Ala Val Leu Pro Ala Cys Asp Asp
 165 170 175

Leu Asp Ala Ala Leu Ser Lys Leu Arg Arg Tyr Gly Met Ala Gln Gln
 180 185 190

Leu Gln Gln Gln Ile Val Gly Ala Leu Arg Asp Leu Ala Pro Glu Tyr
 195 200 205

Ala Cys Glu Leu Ala Ala Leu Pro Leu Gly Ala Glu Thr Ala Ala Arg
 210 215 220
 Arg Ala Lys Gly Val Ala Leu Met Arg Gly Val Leu Arg Ala Ala Ala
 225 230 235 240
 Thr Val Ala Ala Ala Thr Ala Lys Pro Glu Ala Ala Ala Asp Asp Ser
 245 250 255
 Asp Asp Asp Glu Val Asp Pro Arg Ser Val Leu Ala Ala Ala Arg Arg
 260 265 270
 Met Leu Thr Arg Ser Arg Asp Val Leu Thr Cys Ser Glu Gln Val Ala
 275 280 285
 Leu Leu Pro Asp Ala Leu Arg Gly Ser Gly Val Ser Pro Thr Pro Asp
 290 295 300
 Ala Leu Tyr Asp Gly Ala Leu Ala His Leu Val Asp Gly Phe Arg Asn
 305 310 315 320
 Gly Trp Pro His Ser Val His Gln Ala Asp Gln Leu Leu Ala Lys Leu
 325 330 335
 Glu Ala Gln Gln Ala Arg Ala Ala Ala Met Arg Arg Glu Gln Ser Glu
 340 345 350
 Leu Ala Ala Ala Ala Ala Ala Arg Arg Ala Met Tyr Ser Gly Pro Ala
 355 360 365
 Ala Ala His Gly Pro Thr Leu Tyr Thr Asn Tyr Asn Asn Pro Ala Gly
 370 375 380
 Ser Gly Asn Gly Ala Pro Pro Pro Pro Pro Arg Pro Met Pro Met Val
 385 390 395 400
 Pro Arg Gly Asp Gly Gln His Ala Met Ala Ala Ser Val Ala Ala His
 405 410 415
 Val His Ser Thr Ala Met Ala Glu His Ala Ala Arg Ser Ala Ala Gly
 420 425 430

Gly Ala Ala Gly Ala Ser Asp Gly Gly Ala His Ala Asn Gly Val Ala
 435 440 445
 Leu Glu Arg Ala Val Cys Ala Val Leu Leu Gly Asp Tyr Thr Ala Ala
 450 455 460
 Val Glu Arg Leu Gly Leu Asp Thr Asn Ala Ala Val Glu Gln Glu Gln
 465 470 475 480
 Leu Arg Glu Phe Val Leu Ala His Ser Pro Asn Gly Arg Gly Asp Leu
 485 490 495
 Arg Pro Gly Leu Arg Ala Leu Ala Thr Arg Trp Leu Glu Gly Val Ala
 500 505 510
 Leu Ala Ser Phe Arg Asp Thr Ala Gly Ser Pro Val Pro Pro Leu Glu
 515 520 525
 Ala Ser Trp Phe Ala Asp Leu Arg Val Ala Phe Tyr Leu Gln Val Trp
 530 535 540
 Arg Leu Cys Arg Val Glu Gln Val Leu Ala Ala Ala His Phe Leu Ala
 545 550 555 560
 Asn Leu Leu Pro Asn Met Leu Lys Ala Ile Ala Gly Thr Ala Val Lys
 565 570 575
 Val Ala Ala Asn Thr Ala Val Ala Ala Ser Arg Ala Gln Arg Leu Ser
 580 585 590
 Ala Thr Val Ala Ala Ser Thr Ala Thr Ala Ser Ser Ser Ser Ala
 595 600 605
 Ala Arg Gly Ala Arg Ala Gly Ala Leu Ser Ala Ala Thr Ala Ala Ala
 610 615 620
 His Ala Ala Arg Arg Gln Gln Ala Asn Ala Val Gly Ala Ser Ile Val
 625 630 635 640
 Gly Ala Asp Val Leu Pro Pro Thr Ala Val Ala Ala Ala Ala Ala Ala
 645 650 655
 Gly Thr Ala Ala Ala Ala Ala Val Thr Gly Pro Ala Leu Gly Arg Gly
 660 665 670

Ala Ala Ala Ser Ala Ser Ser Phe Glu Glu Gly Ala Ala Glu Ala Ala
675 680 685

Asp Leu Arg Arg Arg Phe Val Ala Thr Ser Arg Gly Ala Ser Ala Ala
690 695 700

Val Gly Ala Pro Thr Ala Pro Ala Ala Met Thr Gly Pro Gln His Gly
705 710 715 720

Ala Ala Ser Ala Ala Gln Ser His Arg Glu Glu Asp Glu Asp Ser His
725 730 735

Gly Gly Gln Glu Gly Gly Val Pro Arg Arg Met Ser Glu Ala Asp Leu
740 745 750

Arg Ala His Leu Ala Gly Leu Glu Lys Ala Met Trp Asp Ser Glu Leu
755 760 765

Pro Pro Pro Pro Pro Ser Arg Ala Gln Lys Ala Leu Thr Tyr Ala Ala
770 775 780

Gly Leu Leu Ala Val Val Val Ala Phe Leu Val Ser Ser Phe Phe Arg
785 790 795 800

Arg Asn Asp Gly Ala Ala Ser Ala Leu Ala Pro Ala Ala Val Thr Thr
805 810 815

Ala Ser Val Ala Val Ser Ala Gln Pro Ala Lys Pro Gly Lys Ala Thr
820 825 830

Arg Ser Ala His
835

<210> 191
<211> 2022
<212> DNA
<213> Thermosynechococcus elongatus

<400> 191
gtgcgcattc ccctcgatta ttaccaagtg ttgggtgtgc ctattcaggc aacgccggag 60
caaattgagc aggcctttcg ggaccggctg ttgcagctcc ctacccatca gcactcccc 120
accacagttg ccacccgtcg cgaactcatt gagcaggcct atgcagtttt gcgagaaccg 180
gagcagcgcg atgcctacga tcgccactgc cgtaccgttg atcccgatga tttgattgcc 240

cagttggatc	ccgatgccac	cactccccac	attgaaatta	gtgatgagca	attgtcgggg	300
gcactcctac	tgctgtatga	actaggaaat	tatgccaag	ttgtcaacct	gggagacgcc	360
tttcttaaaa	aggatgtttt	tgagcgcaat	cgccccata	cttccccctgc	cgccgttgcc	420
gacattaccc	tactgtggc	tttggcctat	ctggaattgg	gacgggagga	atggcagcgg	480
cagtcctatg	aatcagccgc	ctctcagcta	gaagccggtc	tccaggtact	tcagcgggta	540
aatttgtttc	ccgagctcca	ggagcagttt	cagacggaac	tgaatcggct	gcgtccctac	600
cgcattctgg	aattactggc	actgcctttg	tccgatagtg	cgaatcggca	gcgggggtatt	660
ttattgctgc	ggcaaagtct	gagtgcgcgc	gggggcattg	aggggcgcgg	tgacgatcgc	720
tcaggactaa	cagttgagga	ttttctgaaa	tttattttgc	aactgcgcag	ccatcttacc	780
gtggcagaac	aacaggaact	ctttgaacgg	gaatcgcggc	gtccctcagc	ggtggccacc	840
taccttgccg	tacatgcctt	ggtagcacgg	ggagtgcattg	aactgcagcc	gagctatatt	900
tgtcggggcca	aggattttatt	gcagcagctg	ctccccatc	aagacgtcta	tcttgaactt	960
gccagttgct	tgctgctttt	gggacagccc	accgaggcct	tggcagctct	tgaccacagc	1020
caagatcaac	cgactctgga	ctttatccgc	cgtcatgccg	gtgaggctgg	cgatcgactg	1080
ccggggcttt	attactacac	cacacaatgg	ctcacggagg	aaatttatcc	tgcatttcgg	1140
gacttggggg	aaacaccctg	ggccttggag	gcttactttg	ctgatgccaa	tgtccaaacc	1200
tatctagagg	ctctcagtga	ggactccatt	gcccctgaac	cccctgcgac	cactgcctct	1260
gcgctccctg	aagtgatcag	accaacgggtg	gccgtgcccc	ctccccctctc	cttcacagcg	1320
gaaacgttac	cgttgccagga	tcagagtcgg	ctgggtcagg	gcctttcggc	atcggttttt	1380
acccttctg	caactgcaac	ggggacatcg	atgccccaac	catcgccctcg	caaacggcgc	1440
agccctcgaa	accgttgccg	ccaaaaacgt	cagacttggt	tttggtggg	tgcaggagtg	1500
gttcttgtgg	gtttaggggc	gttggcaaaa	gtctattggc	ccgccaaaac	cgctgaagcc	1560
ccccgcgcgc	cggtgacacc	ggcaccaact	cctgtggcaa	cgccgacccc	aacgccacaa	1620
ccgacgacct	tagccatcac	tttaacacca	gagatggcgc	gcgatcgccct	ccacacttgg	1680
cagcaaatta	aagcccaagc	ccttggggcg	ccatttgagg	tggacaaact	aacaacgatt	1740
ttggcggagc	cagaactcag	ccgctggcga	tcgcgggcac	agggcttaaa	gtccgagggc	1800
agctattggg	tttataccct	aaagaactta	gaagtgaagg	aagtccgcct	ccaaaggagc	1860

gacgctgtgg aggtgttggc agaagtcaac gaggatgccc gtttctatga acaggggaacc 1920
ctgcgcactg atatttccta tagcgatccc taccgggtca tttatacctt tatccgtcgc 1980
ggcaatcaat ggttgattca aggcattgcag gtgggttagtt aa 2022

<210> 192
<211> 673
<212> PRT
<213> Thermosynechococcus elongatus

<400> 192

Met Arg Ile Pro Leu Asp Tyr Tyr Gln Val Leu Gly Val Pro Ile Gln
1 5 10 15

Ala Thr Pro Glu Gln Ile Glu Gln Ala Phe Arg Asp Arg Leu Leu Gln
20 25 30

Leu Pro Thr His Gln His Ser Pro Thr Thr Val Ala Thr Arg Arg Glu
35 40 45

Leu Ile Glu Gln Ala Tyr Ala Val Leu Arg Glu Pro Glu Gln Arg Asp
50 55 60

Ala Tyr Asp Arg His Cys Arg Thr Val Asp Pro Asp Asp Leu Ile Ala
65 70 75 80

Gln Leu Asp Pro Asp Ala Thr Thr Pro His Ile Glu Ile Ser Asp Glu
85 90 95

Gln Leu Ser Gly Ala Leu Leu Leu Leu Tyr Glu Leu Gly Asn Tyr Ala
100 105 110

Gln Val Val Asn Leu Gly Asp Ala Phe Leu Lys Lys Asp Val Phe Glu
115 120 125

Arg Asn Arg Pro Tyr Thr Ser Pro Ala Ala Val Ala Asp Ile Thr Leu
130 135 140

Thr Val Ala Leu Ala Tyr Leu Glu Leu Gly Arg Glu Glu Trp Gln Arg
145 150 155 160

Gln Ser Tyr Glu Ser Ala Ala Ser Gln Leu Glu Ala Gly Leu Gln Val
165 170 175

Leu Gln Arg Val Asn Leu Phe Pro Glu Leu Gln Glu Gln Phe Gln Thr
 180 185 190
 Glu Leu Asn Arg Leu Arg Pro Tyr Arg Ile Leu Glu Leu Leu Ala Leu
 195 200 205
 Pro Leu Ser Asp Ser Ala Asn Arg Gln Arg Gly Ile Leu Leu Leu Arg
 210 215 220
 Gln Met Leu Ser Glu Arg Gly Gly Ile Glu Gly Arg Gly Asp Asp Arg
 225 230 235 240
 Ser Gly Leu Thr Val Glu Asp Phe Leu Lys Phe Ile Leu Gln Leu Arg
 245 250 255
 Ser His Leu Thr Val Ala Glu Gln Gln Glu Leu Phe Glu Arg Glu Ser
 260 265 270
 Arg Arg Pro Ser Ala Val Ala Thr Tyr Leu Ala Val His Ala Leu Val
 275 280 285
 Ala Arg Gly Val His Glu Leu Gln Pro Ser Tyr Ile Cys Arg Ala Lys
 290 295 300
 Asp Leu Leu Gln Gln Leu Leu Pro His Gln Asp Val Tyr Leu Glu Leu
 305 310 315 320
 Ala Ser Cys Leu Leu Leu Leu Gly Gln Pro Thr Glu Ala Leu Ala Ala
 325 330 335
 Leu Asp His Ser Gln Asp Gln Pro Thr Leu Asp Phe Ile Arg Arg His
 340 345 350
 Ala Gly Glu Ala Gly Asp Arg Leu Pro Gly Leu Tyr Tyr Tyr Thr Thr
 355 360 365
 Gln Trp Leu Thr Glu Glu Ile Tyr Pro Ala Phe Arg Asp Leu Gly Glu
 370 375 380
 Thr Pro Val Ala Leu Glu Ala Tyr Phe Ala Asp Ala Asn Val Gln Thr
 385 390 395 400
 Tyr Leu Glu Ala Leu Ser Glu Asp Ser Ile Ala Pro Glu Pro Pro Ala
 405 410 415

Thr	Thr	Ala	Ser	Ala	Leu	Pro	Glu	Val	Ile	Arg	Pro	Thr	Val	Ala	Val			
			420					425					430					
Pro	Pro	Pro	Leu	Ser	Phe	Thr	Ala	Glu	Thr	Leu	Pro	Leu	Gln	Asp	Gln			
			435				440					445						
Ser	Arg	Leu	Gly	Gln	Gly	Leu	Ser	Ala	Ser	Ala	Phe	Thr	Pro	Ser	Ala			
	450					455					460							
Thr	Ala	Thr	Gly	Thr	Ser	Met	Pro	Gln	Pro	Ser	Pro	Arg	Lys	Arg	Arg			
465					470					475					480			
Ser	Pro	Arg	Asn	Arg	Cys	Ala	Gln	Lys	Arg	Gln	Thr	Trp	Phe	Trp	Met			
			485						490					495				
Gly	Ala	Gly	Val	Val	Leu	Val	Gly	Leu	Gly	Ala	Leu	Ala	Lys	Val	Tyr			
			500					505					510					
Trp	Pro	Ala	Lys	Thr	Ala	Glu	Ala	Pro	Pro	Pro	Pro	Val	Thr	Pro	Ala			
		515					520					525						
Pro	Thr	Pro	Val	Ala	Thr	Pro	Thr	Pro	Thr	Pro	Gln	Pro	Thr	Thr	Leu			
	530					535					540							
Ala	Ile	Thr	Leu	Thr	Pro	Glu	Met	Ala	Arg	Asp	Arg	Leu	His	Thr	Trp			
545					550					555					560			
Gln	Gln	Ile	Lys	Ala	Gln	Ala	Leu	Gly	Arg	Pro	Phe	Glu	Val	Asp	Lys			
				565					570					575				
Leu	Thr	Thr	Ile	Leu	Ala	Glu	Pro	Glu	Leu	Ser	Arg	Trp	Arg	Ser	Arg			
			580					585					590					
Ala	Gln	Gly	Leu	Lys	Ser	Glu	Gly	Ser	Tyr	Trp	Val	Tyr	Thr	Leu	Lys			
		595					600					605						
Asn	Leu	Glu	Val	Lys	Glu	Val	Arg	Leu	Gln	Arg	Ser	Asp	Arg	Val	Glu			
	610					615					620							
Val	Leu	Ala	Glu	Val	Asn	Glu	Asp	Ala	Arg	Phe	Tyr	Glu	Gln	Gly	Thr			
625					630					635					640			

Leu Arg Thr Asp Ile Ser Tyr Ser Asp Pro Tyr Arg Val Ile Tyr Thr
645 650 655

Phe Ile Arg Arg Gly Asn Gln Trp Leu Ile Gln Gly Met Gln Val Val
660 665 670

Ser

<210> 193
<211> 2370
<212> DNA
<213> *Trichodesmium erythraeum*

<400> 193
gtgcggtattc cattagatta ttatcgaatt ttaggtttac caattcaggc tactgctgaa 60
cagttgcggc aggcacatca agaccgcact cagcagtttc ctagaaggga gtattctgaa 120
gccacaatag ttgctcgtaa acagcttata gatgaggctt atgctgttct ttgcgatcct 180
gaacaacgtc aaacctatga tggtaacttt ttagctaaaa cctacgagcc aatagtagaa 240
gaactcaatc caagttctca gataaatttt gatcaagcac aagaaaaaga aaccacactt 300
aaggagacta gagaagttct tccggaaata gcttctaaac agttaaaaaa aaggacaagt 360
tatcaaaaca gagagactaa agctgcctct gattttcatt ctaatacccc tagtatagaa 420
atagaatatc cacaatttgt gggagccatc ctaattttac atgagctagg agaatatgag 480
ctagtattaa aaataactca cccttatctt cttacaata gtataactat taaagatgga 540
cgttttggag acccagcatt agttttgcca gatgttgctc ttacagttgc tctagcaaatt 600
ttagaattgg gcagagagga atggcaacaa ggacaatacg aaagtgcagc tacagcttta 660
gaggctggcc tagggttatt gctacgagaa aacctatttg tccaaatacg aggagagata 720
caagctgacc ttataagct acgtccttat agaataatgg agctaatagc actaccagag 780
gaaatagctc tagaccgtag ccgtggacta gaaattcttc aagatatgct caatgaacgg 840
ggaggaattg atggtcaagg tgaagatagc tctggacttg ggatagaaga ttttctaaag 900
tttgttcagc agctacgtca atacttaact acagcagagc aaaagaagtt atttgaggca 960
gaagcccttc gcccttcgcg agttggtgca tatctagcgg ttatactttt tttagctcaa 1020
gggtttgctc aaaaacaacc agcctttatt cgtaaagcta agttgatgtt aatgcaattg 1080
ggtcggagtc aagatgtaaa tttagagaaa tctgtctgtg ctttactttt agggcaaact 1140
gaagaagcta gtcgttcatt agaacttagc catgaaaatg aacctctatc ctttattaaa 1200

gaaaattctc aacaatctcc agatttattg ccagggtctat gtctctatgc tgaacattgg 1260
 ttgacagagg aggtttttcc acatttccgt gatttgtctg acaagtcagc ttctttgaaa 1320
 gattattttg cagatcaaca tgttcaagct tatctagaag ctttacctac agaagcagag 1380
 gtagctaadc aatgggtagt cgttcagcct cgtcgtagta atcacaataa aaaacaaatg 1440
 ttcgacccca aggaacttga gaagttgaat gtatcagatt tggaggataa agatatttct 1500
 cgggtagatg ctactgctac tgggtattgtt gcttctggaa gtcaaggaag ttctaattta 1560
 ctaggggcta gttctgatgg gttgcttcaa gaattagaaa aatcatcatc tactagaggt 1620
 gggccaaaac aagtaactac taagagttct agtcactatt taggaaaaat tagggaaaag 1680
 agtataagtg gtttacctga gtttaatgaa agtacatcta ttgagagtgg ggggttacct 1740
 caatctatcc aagagcatag ttcacgtaga acttctgcta gaagagaacc tgtaagtgtt 1800
 ggtcgtttta tattaatcgc aattgtggga tttttgttaa taggatttat tgggttggtta 1860
 acaattaaaa ctatcggtg gttagtaaat gctttaggat gggaaagaga aaaactgatg 1920
 atacaattgg ataggcctcc tatagaaatc ccagaacctg atcgggttaa cctcgcagca 1980
 tcaggaccga taacaaaaga agtagcaagg cgaacaattc aaagttgggt agatatcaag 2040
 gcttctgctc ttggctctaa tcataaaatt gaacaattac caaatatttt agtagaaccg 2100
 gcactttctc gttgggttacc tacagctaata gccctgaagc aagaaaagtc ataccgtagg 2160
 tatgagcatg atttagaaat aagtaatata aagatgagta atacaaattc taatctcgct 2220
 caagtagatg ctaaagtgat agaaaaggta gagttttatt ctgacaatgg tagattaact 2280
 aatactaaca atgaaaactt atttgttcgt tatgatttag ttcgtaaaag tcaaaaatgg 2340
 caaattagta attggaagggt attgagataa 2370

<210> 194
 <211> 789
 <212> PRT
 <213> Trichodesmium erythraeum

<400> 194

Val Arg Ile Pro Leu Asp Tyr Tyr Arg Ile Leu Gly Leu Pro Ile Gln
 1 5 10 15

Ala Thr Ala Glu Gln Leu Arg Gln Ala His Gln Asp Arg Thr Gln Gln
 20 25 30

Phe Pro Arg Arg Glu Tyr Ser Glu Ala Thr Ile Val Ala Arg Lys Gln
 35 40 45

Leu Ile Asp Glu Ala Tyr Ala Val Leu Cys Asp Pro Glu Gln Arg Gln
 50 55 60

Thr Tyr Asp Gly Asn Phe Leu Ala Lys Thr Tyr Glu Pro Ile Val Glu
 65 70 75 80

Glu Leu Asn Pro Ser Ser Gln Ile Asn Phe Asp Gln Ala Gln Glu Lys
 85 90 95

Glu Thr Thr Leu Lys Glu Thr Arg Glu Val Leu Pro Glu Ile Ala Ser
 100 105 110

Lys Gln Leu Lys Lys Arg Thr Ser Tyr Gln Asn Arg Glu Thr Lys Ala
 115 120 125

Ala Ser Asp Phe His Ser Asn Thr Pro Ser Ile Glu Ile Glu Tyr Pro
 130 135 140

Gln Phe Val Gly Ala Ile Leu Ile Leu His Glu Leu Gly Glu Tyr Glu
 145 150 155 160

Leu Val Leu Lys Ile Thr His Pro Tyr Leu Leu Asn Asn Ser Ile Thr
 165 170 175

Ile Lys Asp Gly Arg Phe Gly Asp Pro Ala Leu Val Leu Pro Asp Val
 180 185 190

Val Leu Thr Val Ala Leu Ala Asn Leu Glu Leu Gly Arg Glu Glu Trp
 195 200 205

Gln Gln Gly Gln Tyr Glu Ser Ala Ala Thr Ala Leu Glu Ala Gly Leu
 210 215 220

Gly Leu Leu Leu Arg Glu Asn Leu Phe Val Gln Ile Arg Gly Glu Ile
 225 230 235 240

Gln Ala Asp Leu Tyr Lys Leu Arg Pro Tyr Arg Ile Met Glu Leu Ile
 245 250 255

Ala Leu Pro Glu Glu Ile Ala Leu Asp Arg Ser Arg Gly Leu Glu Ile
 260 265 270

Leu Gln Asp Met Leu Asn Glu Arg Gly Gly Ile Asp Gly Gln Gly Glu
 275 280 285
 Asp Ser Ser Gly Leu Gly Ile Glu Asp Phe Leu Lys Phe Val Gln Gln
 290 295 300
 Leu Arg Gln Tyr Leu Thr Thr Ala Glu Gln Lys Lys Leu Phe Glu Ala
 305 310 315 320
 Glu Ala Leu Arg Pro Ser Ala Val Gly Ala Tyr Leu Ala Val Tyr Thr
 325 330 335
 Phe Leu Ala Gln Gly Phe Ala Gln Lys Gln Pro Ala Phe Ile Arg Lys
 340 345 350
 Ala Lys Leu Met Leu Met Gln Leu Gly Arg Ser Gln Asp Val Asn Leu
 355 360 365
 Glu Lys Ser Val Cys Ala Leu Leu Leu Gly Gln Thr Glu Glu Ala Ser
 370 375 380
 Arg Ser Leu Glu Leu Ser His Glu Asn Glu Pro Leu Ser Phe Ile Lys
 385 390 395 400
 Glu Asn Ser Gln Gln Ser Pro Asp Leu Leu Pro Gly Leu Cys Leu Tyr
 405 410 415
 Ala Glu His Trp Leu Thr Glu Glu Val Phe Pro His Phe Arg Asp Leu
 420 425 430
 Ser Asp Lys Ser Ala Ser Leu Lys Asp Tyr Phe Ala Asp Gln His Val
 435 440 445
 Gln Ala Tyr Leu Glu Ala Leu Pro Thr Glu Ala Glu Val Ala Asn Gln
 450 455 460
 Trp Val Val Val Gln Pro Arg Arg Ser Asn His Asn Lys Lys Gln Met
 465 470 475 480
 Phe Asp Pro Lys Glu Leu Glu Lys Leu Asn Val Ser Asp Leu Glu Asp
 485 490 495
 Lys Asp Ile Ser Arg Val Asp Ala Thr Ala Thr Gly Ile Val Ala Ser
 500 505 510

Gly	Ser	Gln	Gly	Ser	Ser	Asn	Leu	Leu	Gly	Ala	Ser	Ser	Asp	Gly	Leu	515	520	525
Leu	Gln	Glu	Leu	Glu	Lys	Ser	Ser	Ser	Thr	Arg	Gly	Gly	Pro	Lys	Gln	530	535	540
Val	Thr	Thr	Lys	Ser	Ser	Ser	His	Tyr	Leu	Gly	Lys	Ile	Arg	Glu	Lys	545	550	555
Ser	Ile	Ser	Gly	Leu	Pro	Glu	Phe	Asn	Glu	Ser	Thr	Ser	Ile	Glu	Ser	565	570	575
Gly	Gly	Leu	Pro	Gln	Ser	Ile	Gln	Glu	His	Ser	Ser	Arg	Arg	Thr	Ser	580	585	590
Ala	Arg	Arg	Glu	Pro	Val	Lys	Phe	Gly	Arg	Leu	Ile	Leu	Ile	Ala	Ile	595	600	605
Val	Gly	Phe	Leu	Leu	Ile	Gly	Phe	Ile	Gly	Leu	Leu	Thr	Ile	Lys	Thr	610	615	620
Ile	Gly	Trp	Leu	Val	Asn	Ala	Leu	Gly	Trp	Glu	Arg	Glu	Lys	Leu	Met	625	630	635
Ile	Gln	Leu	Asp	Arg	Pro	Pro	Ile	Glu	Ile	Pro	Glu	Pro	Asp	Arg	Val	645	650	655
Asn	Leu	Ala	Ala	Ser	Gly	Pro	Ile	Thr	Lys	Glu	Val	Ala	Arg	Arg	Thr	660	665	670
Ile	Gln	Ser	Trp	Leu	Asp	Ile	Lys	Ala	Ser	Ala	Leu	Gly	Pro	Asn	His	675	680	685
Lys	Ile	Glu	Gln	Leu	Pro	Asn	Ile	Leu	Val	Glu	Pro	Ala	Leu	Ser	Arg	690	695	700
Trp	Leu	Pro	Thr	Ala	Asn	Ala	Leu	Lys	Gln	Glu	Lys	Ser	Tyr	Arg	Arg	705	710	715
																		720

Tyr Glu His Asp Leu Glu Ile Ser Asn Ile Lys Met Ser Asn Thr Asn
725 730 735

Ser Asn Leu Ala Gln Val Asp Ala Lys Val Ile Glu Lys Val Glu Phe
740 745 750

Tyr Ser Asp Asn Gly Arg Leu Thr Asn Thr Asn Asn Glu Asn Leu Phe
755 760 765

Val Arg Tyr Asp Leu Val Arg Lys Ser Gln Lys Trp Gln Ile Ser Asn
770 775 780

Trp Lys Val Leu Arg
785

<210> 195
<211> 765
<212> PRT
<213> Homo sapiens

<400> 195

Met Gly Asn Arg Gly Met Glu Asp Leu Ile Pro Leu Val Asn Arg Leu
1 5 10 15

Gln Asp Ala Phe Ser Ala Ile Gly Gln Asn Ala Asp Leu Asp Leu Pro
20 25 30

Gln Ile Ala Val Val Gly Gly Gln Ser Ala Gly Lys Ser Ser Val Leu
35 40 45

Glu Asn Phe Val Gly Arg Val Thr Arg Arg Pro Leu Val Leu Gln Leu
50 55 60

Val Asn Ala Thr Thr Glu Tyr Ala Glu Phe Leu His Cys Lys Gly Lys
65 70 75 80

Lys Phe Thr Glu Ala Glu Thr Asp Arg Val Thr Gly Thr Asn Lys Gly
85 90 95

Ile Ser Pro Val Pro Ile Asn Leu Arg Val Tyr Ser Pro His Val Leu
100 105 110

Asn Leu Thr Leu Val Asp Leu Pro Gly Met Thr Lys Val Pro Val Gly
115 120 125

Asp	Gln	Pro	Pro	Asp	Ile	Glu	Phe	Gln	Ile	Arg	Asp	Met	Leu	Met	Gln	130	135	140
Phe	Val	Thr	Lys	Glu	Asn	Cys	Ser	Asp	Leu	Ala	Asn	Ser	Asp	Ala	Leu	145	150	155
Lys	Val	Ala	Lys	Glu	Val	Asp	Pro	Gln	Gly	Gln	Arg	Thr	Ile	Gly	Val	165	170	175
Ile	Thr	Lys	Leu	Asp	Leu	Met	Asp	Glu	Gly	Thr	Asp	Ala	Arg	Asp	Val	180	185	190
Leu	Glu	Asn	Lys	Leu	Leu	Pro	Leu	Arg	Arg	Gly	Tyr	Ile	Gly	Val	Val	195	200	205
Asn	Arg	Ser	Gln	Lys	Asp	Ile	Asp	Gly	Lys	Lys	Asp	Ile	Thr	Phe	Leu	210	215	220
Ser	His	Pro	Ser	Tyr	Arg	His	Leu	Ala	Asp	Arg	Met	Gly	Thr	Pro	Tyr	225	230	235
Leu	Gln	Lys	Val	Leu	Asn	Gln	Gln	Leu	Thr	Asn	His	Ile	Arg	Asp	Thr	245	250	255
Leu	Pro	Gly	Leu	Arg	Asn	Lys	Leu	Gln	Ser	Gln	Leu	Leu	Ser	Ile	Glu	260	265	270
Lys	Glu	Val	Glu	Glu	Tyr	Lys	Asn	Phe	Arg	Pro	Asp	Asp	Pro	Ala	Arg	275	280	285
Lys	Thr	Lys	Ala	Leu	Asp	Phe	Glu	Lys	Arg	Ile	Glu	Gly	Ser	Gly	Asp	290	295	300
Gln	Ile	Asp	Thr	Tyr	Glu	Leu	Ser	Gly	Gly	Ala	Arg	Ile	Asn	Arg	Ile	305	310	315
Phe	His	Glu	Arg	Phe	Pro	Phe	Glu	Leu	Val	Lys	Met	Glu	Phe	Asp	Glu	325	330	335
Lys	Glu	Leu	Arg	Arg	Glu	Ile	Ser	Tyr	Ala	Ile	Lys	Asn	Ile	His	Gly	340	345	350

Ile Arg Thr Gly Leu Phe Thr Pro Asp Met Ala Lys Lys Ile Arg Glu
 355 360 365
 Pro Cys Leu Lys Cys Val Asp Met Val Ile Ser Glu Leu Ile Ser Thr
 370 375 380
 Val Arg Gln Cys Thr Lys Lys Leu Gln Gln Tyr Pro Arg Leu Arg Glu
 385 390 395 400
 Glu Met Glu Arg Ile Val Thr Thr His Ile Arg Glu Arg Glu Gly Arg
 405 410 415
 Thr Lys Glu Gln Val Met Met Asn Thr Asn His Glu Asp Phe Ile Gly
 420 425 430
 Phe Ala Asn Ala Gln Gln Arg Ser Asn Gln Met Asn Lys Lys Lys Thr
 435 440 445
 Ser Gly Asn Gln Asp Glu Ile Leu Val Ile Arg Lys Gly Trp Leu Thr
 450 455 460
 Ile Asn Asn Ile Gly Ile Met Lys Gly Gly Ser Lys Glu Tyr Trp Phe
 465 470 475 480
 Val Leu Thr Ala Glu Asn Leu Ser Trp Tyr Lys Asp Asp Ser Val Asp
 485 490 495
 Asn Leu Lys Leu Arg Asp Val Glu Lys Gly Phe Met Ser Ser Lys His
 500 505 510
 Ile Phe Ala Leu Phe Asn Thr Glu Gln Arg Asn Val Tyr Lys Asp Tyr
 515 520 525
 Arg Gln Leu Glu Leu Ala Cys Glu Thr Gln Glu Glu Val Asp Ser Trp
 530 535 540
 Lys Ala Ser Phe Leu Arg Ala Gly Val Tyr Pro Glu Arg Val Gly Asp
 545 550 555 560
 Lys Glu Lys Asp Ser Phe Met His Ser Met Asp Pro Gln Leu Glu Arg
 565 570 575
 Gln Val Glu Thr Ile Arg Asn Leu Val Asp Ser Tyr Met Ala Ile Val
 580 585 590

Asn Lys Thr Val Arg Asp Leu Met Pro Lys Thr Ile Met His Leu Met
595 600 605

Ile Asn Asn Thr Lys Glu Phe Ile Phe Ser Glu Leu Leu Ala Asn Leu
610 615 620

Tyr Ser Cys Gly Asp Gln Asn Thr Leu Met Arg Asp Glu Met Leu Arg
625 630 635 640

Met Tyr His Ala Leu Lys Glu Ala Leu Ser Ile Ile Gly Asn Ile Asn
645 650 655

Thr Thr Thr Val Ser Thr Pro Met Pro Pro Pro Val Asp Asp Ser Trp
660 665 670

Leu Gln Val Gln Ser Val Pro Ala Gly Arg Arg Ser Pro Thr Ser Ser
675 680 685

Pro Thr Pro Gln Arg Arg Ala Pro Ala Val Pro Pro Ala Arg Pro Gly
690 695 700

Ser Ala Gly Ser Ala Leu Gly Gly Ala Pro Pro Val Pro Ser Arg Pro
705 710 715 720

Gly Ala Ser Pro Asp Pro Phe Gly Pro Pro Pro Gln Val Pro Ser Arg
725 730 735

Pro Asn Arg Ala Pro Pro Gly Val Pro Ser Arg Ser Gly Gln Ala Ser
740 745 750

Pro Ser Arg Pro Glu Ser Pro Arg Pro Pro Phe Asp Leu
755 760 765

<210> 196
<211> 670
<212> PRT
<213> Saccharomyces cerevisiae

<400> 196

Met Ala Ser Leu Glu Asp Leu Ile Pro Thr Val Asn Lys Leu Gln Asp
1 5 10 15

Val Met Tyr Asp Ser Gly Ile Asp Thr Leu Asp Leu Pro Ile Leu Ala
20 25 30

Asn Lys Thr Val Glu Phe Arg Lys His Pro Val Tyr Arg Thr Ile Ser
260 265 270

Thr Lys Cys Gly Thr Arg Tyr Leu Ala Lys Leu Leu Asn Gln Thr Leu
275 280 285

Leu Ser His Ile Arg Asp Lys Leu Pro Asp Ile Lys Thr Lys Leu Asn
290 295 300

Thr Leu Ile Ser Gln Thr Glu Gln Glu Leu Ala Arg Tyr Gly Gly Val
305 310 315 320

Gly Ala Thr Thr Asn Glu Ser Arg Ala Ser Leu Val Asn Phe Ile Ser
325 330 335

Ser Ile Asp Gly Thr Ser Ser Asp Ile Asn Thr Lys Glu Leu Cys Gly
340 345 350

Gly Ala Arg Ile Tyr Tyr Ile Tyr Asn Asn Val Phe Gly Asn Ser Leu
355 360 365

Lys Ser Ile Asp Pro Thr Ser Asn Leu Ser Val Leu Asp Val Arg Thr
370 375 380

Ala Ile Arg Asn Ser Thr Gly Pro Arg Pro Thr Leu Phe Val Pro Glu
385 390 395 400

Leu Ala Lys Leu Leu Leu Glu Pro Ser Gln Arg Cys Val Glu Leu Val
405 410 415

Tyr Glu Glu Leu Met Lys Ile Cys His Lys Cys Gly Ser Ala Glu Leu
420 425 430

Ala Arg Tyr Pro Lys Leu Lys Ser Met Leu Ile Glu Val Ile Ser Glu
435 440 445

Leu Leu Arg Glu Arg Leu Gln Pro Thr Arg Ser Tyr Val Glu Ile Asn
450 455 460

Thr Asn His Pro Asn Phe Leu Ser Ala Thr Glu Ala Met Asp Asp Ile
465 470 475 480

Met Lys Thr Arg Arg Lys Arg Asn Gln Glu Leu Leu Lys Ser Lys Leu
485 490 495

Ser Gln Gln Glu Asn Gly Gln Thr Asn Gly Ile Asn Gly Thr Ser Ser
500 505 510

Ile Ser Ser Asn Ile Asp Gln Asp Asp Gly Ile Asp Ala Glu Ser Lys
515 520 525

Gln Thr Lys Asp Lys Phe Leu Asn Tyr Phe Phe Gly Lys Asp Lys Lys
530 535 540

Gly Gln Pro Val Phe Asp Ala Ser Asp Lys Lys Arg Ser Ile Ala Gly
545 550 555 560

Asp Gly Asn Ile Glu Asp Phe Arg Asn Leu Gln Ile Ser Asp Phe Ser
565 570 575

Leu Gly Asp Ile Asp Asp Pro Leu Thr Glu Arg Glu Glu Leu Glu Cys
580 585 590

Glu Leu Ile Lys Arg Leu Ile Val Ser Tyr Phe Asp Ile Ile Arg Glu
595 600 605

Met Ile Glu Asp Gln Val Pro Lys Ala Val Met Cys Leu Leu Val Asn
610 615 620

Tyr Cys Lys Asp Ser Val Gln Asn Arg Leu Val Thr Lys Leu Tyr Lys
625 630 635 640

Glu Thr Leu Phe Glu Glu Leu Leu Arg Glu Leu Cys Val Lys Ser Leu
645 650 655

Gly Val Tyr Lys Lys Ala Ala Thr Leu Ile Ser Asn Ile Leu
660 665 670

<210> 197

<211> 690

<212> PRT

<213> Arabidopsis thaliana

<400> 197

Met Ala Glu Val Ser Ala Lys Ser Val Thr Val Glu Glu Met Ala Glu
1 5 10 15

Glu Asp Asp Ala Ala Ile Glu Glu Arg Trp Ser Leu Tyr Glu Ala Tyr
20 25 30

Asn	Glu	Leu	His	Ala	Leu	Ala	Gln	Glu	Leu	Glu	Thr	Pro	Phe	Glu	Ala
		35					40					45			
Pro	Ala	Val	Leu	Val	Val	Gly	Gln	Gln	Thr	Asp	Gly	Lys	Ser	Ala	Leu
	50					55					60				
Val	Glu	Ala	Leu	Met	Gly	Phe	Lys	Thr	Arg	Arg	Pro	Ile	Thr	Leu	His
65					70					75					80
Met	Lys	Tyr	Asp	Pro	Gln	Cys	Gln	Phe	Pro	Leu	Cys	His	Leu	Gly	Ser
				85					90					95	
Asp	Asp	Asp	Pro	Ser	Val	Ser	Leu	Pro	Lys	Glu	Ala	Glu	Asn	Met	Arg
			100					105					110		
Leu	Glu	Gln	Glu	Pro	Cys	Ser	Pro	Phe	Ser	Ala	Lys	Glu	Ile	Ile	Val
		115					120					125			
Lys	Val	Gln	Tyr	Lys	Tyr	Cys	Pro	Asn	Leu	Thr	Ile	Ile	Asp	Thr	Pro
	130					135					140				
Gly	Leu	Ile	Ala	Pro	Ala	Pro	Gly	Leu	Lys	Asn	Arg	Ala	Leu	Gln	Val
145					150					155					160
Gln	Ala	Arg	Ala	Val	Glu	Ala	Leu	Val	Arg	Ala	Lys	Met	Gln	His	Lys
				165					170					175	
Glu	Ser	Asp	Trp	Ser	Ile	Ala	Thr	Thr	Arg	Arg	Ile	Val	Met	Gln	Val
			180					185					190		
Asp	Pro	Glu	Leu	Ser	Arg	Thr	Ile	Val	Val	Ser	Thr	Lys	Leu	Asp	Thr
		195					200					205			
Lys	Ile	Pro	Gln	Phe	Ser	Cys	Ser	Ser	Asp	Val	Glu	Val	Phe	Leu	Ser
	210					215					220				
Pro	Pro	Ala	Ser	Ala	Leu	Asp	Ser	Ser	Leu	Leu	Gly	Asp	Ser	Pro	Phe
225					230					235					240
Phe	Tyr	Gly	Gln	Asp	Ser	Val	Tyr	Lys	Ser	Asn	Asp	Glu	Phe	Lys	Gln
				245					250					255	

Ala	Val	Ser	Leu	Arg	Glu	Met	Glu	Asp	Ile	Ala	Ser	Leu	Glu	Lys	Lys	
			260					265					270			
Leu	Gly	Arg	Leu	Leu	Thr	Lys	Gln	Glu	Lys	Ser	Arg	Ile	Gly	Ile	Ser	
		275					280					285				
Lys	Leu	Arg	Leu	Phe	Leu	Glu	Glu	Leu	Leu	Trp	Lys	Arg	Tyr	Lys	Glu	
	290					295					300					
Ser	Val	Pro	Leu	Ile	Ile	Pro	Leu	Arg	Lys	Leu	Asp	Thr	Val	Ser	Lys	
305					310					315					320	
Glu	Leu	Ser	Ser	Leu	Asp	Glu	Ala	Lys	Leu	Lys	Glu	Arg	Gly	Arg	Thr	
				325					330					335		
Phe	His	Asp	Leu	Phe	Leu	Thr	Lys	Leu	Ser	Leu	Leu	Leu	Lys	Gly	Thr	
			340					345					350			
Val	Val	Ala	Pro	Pro	Asp	Lys	Phe	Gly	Glu	Thr	Leu	Gln	Asp	Glu	Arg	
		355					360					365				
Thr	Gln	Gly	Gly	Ala	Phe	Val	Gly	Thr	Asp	Gly	Leu	Gln	Phe	Ser	Arg	
	370					375					380					
Leu	Tyr	Gly	Gly	Ala	Gln	Tyr	His	Arg	Ala	Met	Ala	Glu	Phe	Arg	Phe	
385					390					395					400	
Leu	Val	Gly	Ala	Ile	Lys	Cys	Pro	Pro	Ile	Thr	Arg	Glu	Glu	Ile	Val	
				405					410					415		
Asn	Ala	Cys	Gly	Val	Glu	Asp	Ile	His	Asp	Gly	Thr	Asn	Tyr	Ser	Arg	
			420					425					430			
Thr	Ala	Cys	Val	Ile	Ala	Val	Ala	Lys	Ala	Arg	Glu	Thr	Phe	Glu	Pro	
		435					440					445				
Phe	Leu	His	Gln	Leu	Gly	Leu	Leu	Pro	Ile	Ser	Val	Tyr	Leu	Leu	Gln	
	450					455					460					
Lys	Glu	Gly	Glu	Tyr	Leu	Ser	Gly	His	Glu	Val	Phe	Leu	Lys	Arg	Val	
465					470					475					480	
Ala	Ser	Ala	Phe	Asn	Ser	Phe	Val	Glu	Ser	Thr	Glu	Lys	Ser	Cys	Arg	
				485					490					495		

Asp Lys Cys Met Glu Asp Leu Ala Ser Thr Thr Arg Tyr Val Thr Trp
500 505 510

Ser Leu His Asn Lys Asn Ser Phe Gly Gly Thr Glu His Asn Thr Thr
515 520 525

Ser Gly Asn Ala Ile Gly Phe Ser Leu Pro Gln Asp Ala Leu Gly Gly
530 535 540

Thr Thr Asp Thr Lys Ser Arg Ser Asp Val Lys Leu Ser His Leu Ala
545 550 555 560

Ser Asn Ile Asp Ser Gly Ser Ser Ile Gln Thr Thr Glu Met Arg Leu
565 570 575

Ala Asp Leu Leu Asp Ser Thr Leu Trp Asn Arg Lys Leu Ile Val Tyr
580 585 590

Ala Leu Val Gln Gln Ile Phe Gln Gly Ile Arg Glu Tyr Phe Leu Ala
595 600 605

Ser Ala Glu Leu Lys Phe Asn Cys Phe Leu Leu Met Pro Ile Val Asp
610 615 620

Lys Leu Pro Ala Leu Leu Arg Glu Glu Leu Glu Asn Ala Phe Glu Asp
625 630 635 640

Asp Leu Asp Ser Ile Phe Asp Ile Thr Asn Leu Arg Thr Glu Ile Glu
645 650 655

Leu Arg Arg Val Lys Arg Ile Lys Glu Lys Phe Arg Val Met Asn Glu
660 665 670

Lys Leu Asn Ser His Glu Phe Ala Gln Asn Leu Lys Ala Pro Ser Val
675 680 685

Gln His
690

<210> 198
 <211> 712
 <212> DNA
 <213> Lactuca sativa

<220>
 <221> misc_feature
 <222> (608)..(608)
 <223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (656)..(656)
 <223> n is a, c, g, or t

<400> 198
 ttgttcagct ccgccaaaag aatccaagaa ttggcgtaat ccggctcgat tcttattgtg 60
 aagggaccag gtgacataac ggggtggtgct tattagatct tccatgcatt tttcatggca 120
 tgatctttcg gtggattcag caaagttata gaaagcagat gaaacacgtc tcaagaaaac 180
 ttcattggcca ctttaggaatt cgccttcttt ctgaagaaga taaacggaga tgggaagtaa 240
 tctcttgaga atgtgaagaa gtcgactgcc caactgatga agaaaagggt caaaagtatc 300
 acgagctttt gcaacagcga tgacacatgc agtcctggag taatttggtc catcatgaat 360
 atcttcgacc ccacatgcat tcacaatttc ttcacgtgta attgcagggc attttatccc 420
 tccaacaaca aacctaaatt cagccatggc acgatgatat tgtgcacctc catatagacg 480
 catacctgca ttaggtatta gtttgtgtgg gaactgagag ccatcaatac cgattaatgc 540
 ccctccatta accctctcat cttgtagtgt ttccccaat ttatctggag gtgcaacaac 600
 tgtccctntt catagcagtg ataacttggg aaggaaaaga tcatgaaaag atctcncttt 660
 ctcccttagt ttgacttcat ctaaagtgt gagttcttga tttatgtcat tt 712

<210> 199
 <211> 666
 <212> DNA
 <213> Medicago truncatula

<220>
 <221> misc_feature
 <222> (646)..(646)
 <223> n is a, c, g, or t

<400> 199
 atctaaagta acaaccacca caaaacacaa caatggagga agaaagagaa caccaccaac 60
 tcaaagacaa agaagaaaac gagtggcgtc tctacgaagc ttacaatgaa cttcacgcgc 120

ttgctcaaga acttcacacg cctttcgacg cgccggcggt actggttggtg ggccaccaaaa	180
cagacgggaa gagegcctta gttgaggctc taatgggctt ccagttcaac cacgtcgggtg	240
gtggcaccaa aaccgcgcgg cccttacttc ttcacatgaa atatggccca cattgcgagt	300
ctccttcttg ctatcttctt tctgatgatg acccttctct ttctcaccat atgtcacttt	360
cccaaatacca gggttatatt gaagctgaga atgcgagggt ggagcgtgac tcatgttgctc	420
aattttcagc taaggaaata atcataaaag tggaatacaa atactgtccc aatctcacca	480
taatagacac accaggatta gttgctcctg caccaggctg taaaaatagg gcgatacagg	540
cacaggcacg agcggtagag tcaactgttc gtgcaaaaat gcagcacaag gagttcatta	600
tactctgtct tgaagattgt agtgattgga gcaatgcgac tacgangcgc gttgtaatgc	660
aaattg	666

<210> 200
 <211> 663
 <212> DNA
 <213> Medicago truncatula

<400> 200	
gtcttttatgg ggggtgcacaa tatcatcgag caatggctga atttcgtttt gtagttggag	60
gaatcaagtg cctccaatt acccggaag aaattgtaa tgcttggtga gttgaagaca	120
ttcatgatgg aacaaactac tctaggactg cttgtgtaat tgctgttgca aaggctcatg	180
atacatttga accttttctt catcagttgg ggtctagatt gttgcacata cttgaagagat	240
tgctcccaat ctctttttat cttcttcaga aagattgtga gtatctaagt ggccatcagg	300
tgttcctcag gcgtgttgcc tccgccttcg acaactttgc agaatccact gaaaaatcat	360
gccgtgaaaa atgtatggag gacttggtaa gcaccacacg atatgtctca tgggtctctac	420
acaataagag tcgggcagga ttacgccagt tcttagattc atttggtgga acagaacatt	480
ccaatgtttg taatgatccc actgcaactg ttctatcaca aacaaatgtg caagagaagg	540
aagacacaaa gccacaacta gaagtaaagc tcagtcacgt ggcctctgga actgatccta	600
gcacatccac ccagacagct gaaacaaagc ttgctgacct tcttgatagt acactttgga	660
atc	663

<210> 201
 <211> 622
 <212> DNA
 <213> *Prunus persica*

<220>
 <221> misc_feature
 <222> (609)..(609)
 <223> n is a, c, g, or t

<400> 201
 gcttatacct aacgcaggaa tgcgtttata tgggtggtgca caataccacc gtgccatggc 60
 tgagttccgc tttgtagttg gaggaataaa atgccctcca attacaaggg aagaaattgt 120
 aaatgcatgt ggagttgaag atttacatga tggcacaaac tactcaagga cagcttgtgt 180
 aatagccgtt gcaaaggccc gtgatacatt tgagcctttc cttcatcagt taggttgtag 240
 actcttgcac attctaaaga gattacttcc tatatcagtc tatcttcttc agaaagatgg 300
 tgagtattta agtggccatg aggtgtttct taggcgtggt gcttctgctt tcaatgactt 360
 tgcagaatct accgaaaggg catgtcgtga aaaatgcatg gaggatttag taagcaccac 420
 ccgctatgtc acctggtccc ttcacaacaa gaatcgagct gggttacgtc aatttttaga 480
 ctcgttcgct ggaacagaac ataacactat gggtagtaat tgcgtacctg ctggtatttc 540
 ccaagattca tcctttgggt ctgttgccaa tgagaaggat actaagtcaa gggcagatgt 600
 gaagctcanc catgtggcgt ct 622

<210> 202
 <211> 752
 <212> DNA
 <213> *Solanum tuberosum*

<400> 202
 gcgaatgtga ttcttcaaag gcaacaaagg ctgacggagg aatttggtgcc tcgtgcagat 60
 ctgcttctgt ttctcatgtc tgctgatcga ccattaactg aaagtgaggt tagttttctg 120
 cgttacactc agcagtggag taagaaggtc atttttgtgc tgaacaagtc tgacatatac 180
 aagaataacg gcgagttgga ggaggccatt gcatttatca aagaaaatac acggaaattg 240
 ctgaatacag aatccgtaac actgtatcca gtatctgcac ggctcgctct tgaatcaaag 300
 ctttctactt ttgatggtgc ccttagtcaa aacaatggga gttcaaataa tgattctcac 360
 tggaaaacca agagcttcta tgagcttgag aagtacttgt ctagcttttt ggattcatcc 420
 acaagtactg gaattgagag aatgaagctg aagcttgaaa ctccaattgc cattgcagaa 480

caactacttt tagcttgtca aggacttgtg agacaagaat gtcagcaagc caaacaagac	540
ttgctgtttg ttgaggatct tgtcaacagc gtagaagagt gcacaaagaa gctggaagtt	600
gatagcattc tgtggaagag gcaggttcta tctctgataa actctgctca agcacgtgtt	660
gtccggcttg tagagtcaac gttacaactg tcaaagtgtg atcttgctgc tacatatgta	720
ttcagaagag aaaactctac tcaaagtcca gc	752

<210> 203
 <211> 492
 <212> DNA
 <213> Glycine max

<400> 203	
tggtgaatga agctattgaa gctatcaaga gggctgcacc tctgatggag gaggtttcac	60
ttcttaatga tgcggtttct caaattgatg agccattctt actgggtata gtgggggaat	120
tcaactctgg taaatctacc gtgattaatg cgcttcttgg agaaagatat ctcaaagagg	180
gagttgttcc aacaactaat gagatcacat ttttacgata tactgactta gatattgaac	240
aacaacggtg tgaaaggcat ccagatggcc aatataattg ctacattcct gctccaattc	300
ttaaagagat gaccattggt gatacacctg gaactaatgt gattcttcag aggcagcagc	360
gtcttacaga ggaatttgta ccccgctcag atttacttct ttttgtcatt tctgctgac	420
gccctttaac tggaagtgag attgcttttc ttcgttatcc tcagcagtgg aaaaagaaag	480
cggtctttgt ct	492

<210> 204
 <211> 446
 <212> DNA
 <213> Lycopersicon esculentum

<400> 204	
gagaccatta agtacaattc tataagcagt cttttgaaaa aagatggact tcattggtga	60
atccgtctga ccaaattgag ttaggaacaa ctgggtgtgct ggatagaaaa tctgaagtta	120
ccataagtgt catagaggat ttcagtgtctg cagctgcttc aaaattgctt gagagagata	180
ttcgtgaagt gttcttgggt acttttgggt gtcttggagc agctggttta tcagcgtcgc	240
ttctgacatc tgttcttcaa accacattag aagacctcct tgcacttggc ctttgttctg	300
ctggcggggt attagcggtc ttcaacttct catcccggag acagcaagtg gtagataaag	360
taaagaggac tgctgatggc ctttcacgtg aactcgaaga ggctatgcag aaggagctct	420
tggagacgac tagtaatgtg gaggac	446

<210> 205
 <211> 521
 <212> DNA
 <213> *Populus balsamifera* subsp. *trichocarpa*

<400> 205
 tgggtgttgctg ctgtctgatc aagggcttcc tgcccttggtg gcaagaaata tgatgatggg 60
 ttctcgaact gaatcagttg ttctaccttt ggtagccagg attgtgcaga caccatatgc 120
 tgcattaaat gcggtctaatt ctgaagggtgc tgattttctt atatatgttc atggcccaga 180
 ggatgatcct gatgtagaaa tgagccctgg attcgggaat gtgaagatac caatctttgt 240
 cctcaatgct tcacgtgggg aggacacatt gtcggtgggg gcatcaaaat ttctgaaaac 300
 cgggtgctagt ggttttagttc tgtcattgga agatttgagg ttatttagcg atgatgcttt 360
 gagtcagatg tttgacactc tgagtgcac cggtaaaaac tttcaggatg accttgaaag 420
 cttcagtaag ctcaaata tggatatgga aatgatatt catgaaaaaa caacggtggc 480
 aggctttgtt aaactggagg atagagaaaa acagctcata g 521

<210> 206
 <211> 324
 <212> PRT
 <213> *Arabidopsis thaliana*

<400> 206

Met Glu Ala Leu Ser His Val Gly Ile Gly Leu Ser Pro Phe Gln Leu
 1 5 10 15

Cys Arg Leu Pro Pro Ala Thr Thr Lys Leu Arg Arg Ser His Asn Thr
 20 25 30

Ser Thr Thr Ile Cys Ser Ala Ser Lys Trp Ala Asp Arg Leu Leu Ser
 35 40 45

Asp Phe Asn Phe Thr Ser Asp Ser Ser Ser Ser Ser Phe Ala Thr Ala
 50 55 60

Thr Thr Thr Ala Thr Leu Val Ser Leu Pro Pro Ser Ile Asp Arg Pro
 65 70 75 80

Glu Arg His Val Pro Ile Pro Ile Asp Phe Tyr Gln Val Leu Gly Ala
 85 90 95

Gln Thr His Phe Leu Thr Asp Gly Ile Arg Arg Ala Phe Glu Ala Arg
 100 105 110

Val Ser Lys Pro Pro Gln Phe Gly Phe Ser Asp Asp Ala Leu Ile Ser
115 120 125

Arg Arg Gln Ile Leu Gln Ala Ala Cys Glu Thr Leu Ser Asn Pro Arg
130 135 140

Ser Arg Arg Glu Tyr Asn Glu Gly Leu Leu Asp Asp Glu Glu Ala Thr
145 150 155 160

Val Ile Thr Asp Val Pro Trp Asp Lys Val Pro Gly Ala Leu Cys Val
165 170 175

Leu Gln Glu Gly Gly Glu Thr Glu Ile Val Leu Arg Val Gly Glu Ala
180 185 190

Leu Leu Lys Glu Arg Leu Pro Lys Ser Phe Lys Gln Asp Val Val Leu
195 200 205

Val Met Ala Leu Ala Phe Leu Asp Val Ser Arg Asp Ala Met Ala Leu
210 215 220

Asp Pro Pro Asp Phe Ile Thr Gly Tyr Glu Phe Val Glu Glu Ala Leu
225 230 235 240

Lys Leu Leu Gln Glu Glu Gly Ala Ser Ser Leu Ala Pro Asp Leu Arg
245 250 255

Ala Gln Ile Asp Glu Thr Leu Glu Glu Ile Thr Pro Arg Tyr Val Leu
260 265 270

Glu Leu Leu Gly Leu Pro Leu Gly Asp Asp Tyr Ala Ala Lys Arg Leu
275 280 285

Asn Gly Leu Ser Gly Val Arg Asn Ile Leu Trp Ser Val Gly Gly Gly
290 295 300

Gly Ala Ser Ala Leu Val Gly Gly Leu Thr Arg Glu Lys Phe Met Asn
305 310 315 320

Glu Ala Phe Leu

<210> 207
 <211> 8
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic

<220>
 <221> misc_feature
 <222> (2)..(3)
 <223> Xaa can be any naturally occurring amino acid

<220>
 <221> misc_feature
 <222> (5)..(5)
 <223> Xaa can be any naturally occurring amino acid

<220>
 <221> misc_feature
 <222> (7)..(7)
 <223> Xaa can be any naturally occurring amino acid

<400> 207

Cys Xaa Xaa Cys Xaa Gly Xaa Gly
 1 5

<210> 208
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Synthetic

<220>
 <221> CDS
 <222> (1)..(21)

<400> 208
 gcg ttt tta tga atg aca gct
 Ala Phe Leu Met Thr Ala
 1 5

21